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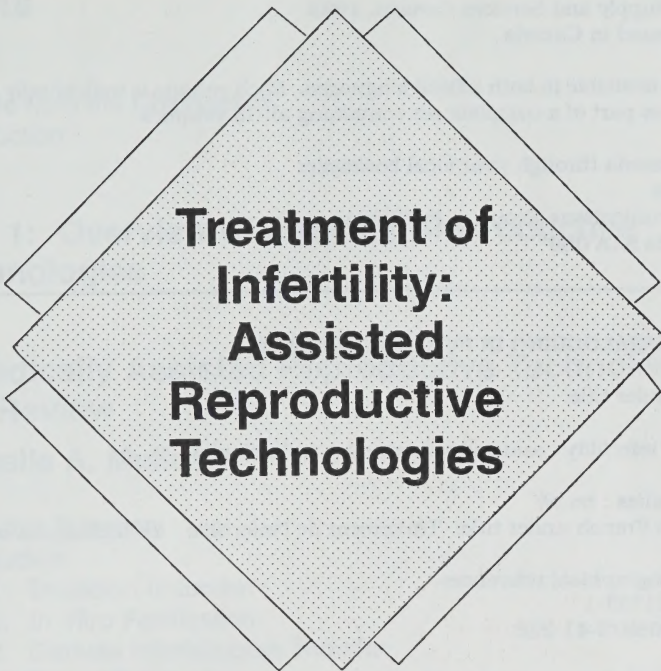
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TREATMENT OF INFERTILITY: Assisted Reproductive Technologies

Research Studies of the
Royal Commission on
New Reproductive Technologies





Treatment of Infertility: Assisted Reproductive Technologies

**Volume 9 of the
Research Studies**

**Royal Commission on
New Reproductive Technologies**

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Consistent with the Commission's commitment to full equality between men and women, care has been taken throughout this volume to use gender-neutral language wherever possible.



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Preface from the Chairperson



As Canadians living in the last decade of the twentieth century, we face unprecedented choices about procreation. Our responses to those choices — as individuals and as a society — say much about what we value and what our priorities are. Some technologies, such as those for assisted reproduction, are unlikely to become a common means of having a family — although the number of children born as a result of these techniques is greater than the number of infants placed for adoption in Canada. Others, such as ultrasound during pregnancy, are already generally accepted, and half of all pregnant women aged 35 and over undergo prenatal diagnostic procedures. Still other technologies, such as fetal tissue research, have little to do with reproduction as such, but may be of benefit to people suffering from diseases such as Parkinson's; they raise important ethical issues in the use and handling of reproductive tissues.

It is clear that opportunities for technological intervention raise issues that affect all of society; in addition, access to the technologies depends on the existence of public structures and policies to provide them. The values and priorities of society, as expressed through its institutions, laws, and funding arrangements, will affect individual options and choices.

As Canadians became more aware of these technologies throughout the 1980s, there was a growing awareness that there was an unacceptably large gap between the rapid pace of technological change and the policy development needed to guide decisions about whether and how to use such powerful technologies. There was also a realization of how little reliable information was available to make the needed policy decisions. In addition, many of the attitudes and assumptions underlying the way in which technologies were being developed and made available did not reflect the profound changes that have been transforming Canada in recent decades. Individual cases were being dealt with in isolation, and often in the absence of informed social consensus. At the same time, Canadians were looking

more critically at the role of science and technology in their lives in general, becoming more aware of their limited capacity to solve society's problems.

These concerns came together in the creation of the Royal Commission on New Reproductive Technologies. The Commission was established by the federal government in October 1989, with a wide-ranging and complex mandate. It is important to understand that the Commission was asked to consider the technologies' impact not only on society, but also on specific groups in society, particularly women and children. It was asked to consider not only the technologies' scientific and medical aspects, but also their ethical, legal, social, economic, and health implications. Its mandate was extensive, as it was directed to examine not only current developments in the area of new reproductive technologies, but also potential ones; not only techniques related to assisted conception, but also those of prenatal diagnosis; not only the condition of infertility, but also its causes and prevention; not only applications of technology, but also research, particularly embryo and fetal tissue research.

The appointment of a Royal Commission provided an opportunity to collect much-needed information, to foster public awareness and public debate, and to provide a principled framework for Canadian public policy on the use or restriction of these technologies.

The Commission set three broad goals for its work: to provide direction for public policy by making sound, practical, and principled recommendations; to leave a legacy of increased knowledge to benefit Canadian and international experience with new reproductive technologies; and to enhance public awareness and understanding of the issues surrounding new reproductive technologies to facilitate public participation in determining the future of the technologies and their place in Canadian society.

To fulfil these goals, the Commission held extensive public consultations, including private sessions for people with personal experiences of the technologies that they did not want to discuss in a public forum, and it developed an interdisciplinary research program to ensure that its recommendations would be informed by rigorous and wide-ranging research. In fact, the Commission published some of that research in advance of the Final Report to assist those working in the field of reproductive health and new reproductive technologies and to help inform the public.

The results of the research program are presented in these volumes. In all, the Commission developed and gathered an enormous body of information and analysis on which to base its recommendations, much of it available in Canada for the first time. This solid base of research findings helped to clarify the issues and produce practical and useful recommendations based on reliable data about the reality of the situation, not on speculation.

The Commission sought the involvement of the most qualified researchers to help develop its research projects. In total, more than 300

scholars and academics representing more than 70 disciplines — including the social sciences, humanities, medicine, genetics, life sciences, law, ethics, philosophy, and theology — at some 21 Canadian universities and 13 hospitals, clinics, and other institutions were involved in the research program.

The Commission was committed to a research process with high standards and a protocol that included internal and external peer review for content and methodology, first at the design stage and later at the report stage. Authors were asked to respond to these reviews, and the process resulted in the achievement of a high standard of work. The protocol was completed before the publication of the studies in this series of research volumes. Researchers using human subjects were required to comply with appropriate ethical review standards.

These volumes of research studies reflect the Commission's wide mandate. We believe the findings and analysis contained in these volumes will be useful for many people, both in this country and elsewhere.

Along with the other Commissioners, I would like to take this opportunity to extend my appreciation and thanks to the researchers and external reviewers who have given tremendous amounts of time and thought to the Commission. I would also like to acknowledge the entire Commission staff for their hard work, dedication, and commitment over the life of the Commission. Finally, I would like to thank the more than 40 000 Canadians who were involved in the many facets of the Commission's work. Their contribution has been invaluable.

Patricia A. Baird

Patricia Baird, M.D., C.M., FRCPC, F.C.C.M.G.

Introduction



Infertility treatments can provide the opportunity to bear a child; as such, therefore, they carry with them the opportunity for great good to individuals. At the same time, however, they raise serious concerns because they can be misused and can have not only harmful consequences to health, but also harmful social, ethical, and legal implications. This volume and the two that follow in the Commission's series of research studies examine the topic of infertility treatments from a variety of perspectives.

This volume is divided into two parts. The first part provides an overview of assisted reproductive technologies, including what they are, how they developed, who is involved in their provision, and how different jurisdictions have dealt with them. The second part then focusses on one particular infertility treatment, donor insemination; but the profound social and ethical issues the studies explore regarding this topic have wider relevance to many infertility treatments, particularly those involving the use of sperm, eggs, or embryos from a third party.

The following two volumes in the series also examine infertility treatments. Volume 10 examines how infertility treatments (both assisted insemination and assisted conception) are offered in Canada in the 1990s and their impact on the individuals most directly concerned — infertility patients and their spouses. Volume 11 looks at what is known about the effectiveness and safety of specific treatments and shows how evidence-based medicine can provide a way to use finite resources most effectively and beneficially.

The Studies

An analysis of any of the aspects — medical and scientific, social, legal, or ethical — of infertility treatments cannot proceed without a clear understanding of what the treatments are. Michelle Mullen provides a clear

description of the most common infertility treatments, apart from donor insemination, focussing on the results and risks associated with each kind — *in vitro* fertilization (IVF), gamete intrafallopian transfer (GIFT), treatment of male factor infertility, embryo cryopreservation, and egg cryopreservation. This study condenses an enormous amount of material into a highly readable summary and is a considerable achievement given the rapid rate of change in the technologies. Her study provides necessary background knowledge for the studies in all three volumes on infertility treatments.

Anne Rochon Ford's socio-historical examination of the development of IVF and related treatments sets Michelle Mullen's description of these technologies in a broader historical context. She links early work with livestock and in laboratories with the early work done in other countries, and with developments in Canada. She provides a critical assessment of what she terms a "love affair" with technology, and she traces the interaction between the growth of the technologies and the development of feminist and ethical critical analysis of that growth. The larger picture that she creates provides important context for understanding the provision of infertility treatments in Canada today and their psychosocial impact on the women who undergo treatment, a subject addressed in the next volume.

For most people undergoing infertility treatment, an important determinant of their evaluation of the experience is the attitude and knowledge of the professionals who deliver that treatment. In that respect, Lynn Curry's study of the professionals involved in the delivery of new reproductive technologies — doctors, nurses, lawyers, and social workers — is illuminating. The results of her study indicate that, despite the importance of well-informed and well-trained professionals in ensuring informed choice by patients, new reproductive technologies do not, for the most part, receive extensive attention as separate subjects in professional training. Instead, their inclusion in existing course structures relies primarily on the interest of individual faculty members. This means that many professionals have the powerful role associated with the rapid medicalization of reproduction noted by Anne Rochon Ford, but appear to be deficient in specialized and substantive training in issues related to new reproductive technologies that should accompany such power. This study also indicates that the situation is not likely to be rectified in the short term, as increasing the time and attention given to both the technical problems and the ethical issues generated by new reproductive technologies will be difficult within the current structure of curricula in medical schools, schools of nursing, and law schools.

Attitudes of professionals, particularly physicians, can play an important role in whether and how a given jurisdiction decides to regulate IVF, donor insemination, and preconception arrangements. In this respect, Linda Williams' inclusion of the medical profession's proposals and reactions to state regulation of new reproductive technologies in seven countries is valuable, as is her inclusion of the views of religious and

feminist organizations. Through her identification of common regulatory trends in each of these areas, Dr. Williams builds on the findings of Anne Rochon Ford to present a broad and comprehensive picture of the development of critical thinking about and commentary on the major reproductive technologies in various countries.

The second part of this volume focusses in greater detail on donor insemination, a process that is relatively straightforward in medical terms but that has complex social, ethical, and legal consequences. As Rona Achilles points out in her overview of the practice, its medicalization has encouraged secrecy about the procedure and allowed neglect of important psychosocial, ethical, and legal issues associated with its use. This is of concern, given the Commission's finding, outlined in the next volume, that assisted insemination, in particular donor insemination, is practised much more frequently as an infertility treatment than IVF. Yet, possibly because donor insemination is less dramatic, there has been much less attention paid to its implications than to those of IVF.

The next two studies, read together, provide a fascinating picture of the social and personal contexts of donor insemination. Daniel Wikler and Norma Wikler analyzed what the Commission had heard in public hearings, written submissions, and written and oral accounts of personal experiences on the practice of donor insemination; Rona Achilles analyzed the views of a sample of more than 70 respondents, which included women who had had children through donor insemination, their partners, both heterosexual and lesbian, their offspring, and the donors themselves. What emerges from both studies is a sense of the complexity and the contradictions that surround the practice of donor insemination, particularly in regard to the importance of biological parent-child ties and traditional family forms. They identify a dissonance, arising out of the fact that the woman receiving the insemination is usually healthy and fertile, between views of donor insemination as a medical service that should simply be subject to the same standards as other medical services and views of it as a social instrument for enabling pregnancies between unrelated women and men.

No medical involvement is required for donor insemination; unlike other infertility treatments, such as IVF, it can be performed in any setting, without specialized training or equipment. Yet, as the studies by Fiona Nelson and Rona Achilles indicate, the practice of self-insemination has implications that are no less complicated than those of donor insemination performed in a medical setting. Single and lesbian women are usually denied access to mainstream fertility clinics, leaving them to rely on individual doctors for help or to find their own donors. This brings health risks that are inherent in using fresh sperm and in having less testing and screening than would be provided by use of sperm from a facility with medical standards. Dr. Achilles also highlights additional reasons why some women choose self-insemination, including the desire for more control over the process of conceiving a child. The Commission believes that donor insemination does not need to be performed in a medical setting, but that

women wishing to use self-insemination should have access to sperm that has been tested for disease and that the donor information necessary for the well-being of the child should be routinely collected and available. It has made recommendations to that effect.

As Daniel Wikler makes clear, all women, single or married, heterosexual or lesbian, seeking donor insemination in essence resort to it for the same reason — they do not have a partner with whom they can conceive, and they wish to avoid unwanted sexual intercourse, either with a man other than their partner or with any man. He notes the implicit social and psychological functions served by medicalizing the procedure. At the same time, he outlines how self-insemination and the involvement of single women and lesbians are challenging the presuppositions that underlie the medicalization of donor insemination. In articulating the tensions between these differing concepts of donor insemination — as a medical or as a social process — he provides a conceptual framework for integrating many of the specific findings and issues raised in the various studies in the second part of this volume. This brings us to where we began — with the finding that a focus on technology has directed attention away from important ethical and social considerations.

Finally, Michèle Musgrove provides an overview of the literature in the area of artificial insemination. This bibliography was compiled early in the Commission's mandate. While not exhaustive, it comprises a listing of books, articles, and theses examining different aspects of artificial insemination as of 1990, and it will be of value to both the scholar seeking in-depth information and the layperson wanting more information on the issues raised in this volume.

Conclusion

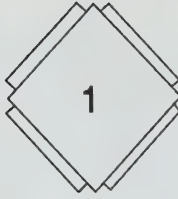
If one theme can be said to emerge from a close reading of the studies in both parts of this volume, it is complexity. The studies in Part 1 trace the growing complexity of infertility treatments as medical procedures, as subjects of increasing ethical and social commentary, as aspects of professional training, and as objects of greater public sector involvement and action. They demonstrate the interdependence between scientific developments, professional training, social commentary, and public regulation, and underscore the necessity of taking an integrative approach to any discussion of these technologies.

This complexity and interdependence are confirmed by the studies in the second part of the volume. In focussing on a specific practice — donor insemination — they permit a “case study” of the factors introduced in Part 1. The examination of donor insemination as a medical procedure and as a social instrument brings the complexity of the discussion into greater relief.

Given that assisted insemination, in particular donor insemination, is a more common infertility treatment than other, more technological,

treatments such as IVF, it is obvious that the issues identified in these papers need to be addressed and that society must put in place mechanisms to protect the children who result from assisted insemination, to protect the women involved, and to ensure public input into policy making in this area.

Part 1:
Overview of
Assisted Reproductive Technologies



Medically Assisted Reproductive Technologies: A Review

Michelle A. Mullen



Executive Summary

This study describes and explains the principal “building blocks,” indications, applications, and known side-effects of the various medically assisted reproductive technologies available today: ovulation induction, *in vitro* fertilization (IVF), gamete intrafallopian transfer and its variants, micromanipulation of sperm cells and embryos, and cryopreservation of human gametes and embryos. In addition to the technical aspects, the personal and cultural challenges inherent in these technologies are highlighted.

Included is a discussion of the most commonly used ovulation-inducing drugs: clomiphene citrate, human menopausal gonadotropin, human chorionic gonadotropin, gonadotropin-releasing hormone analogues, and various combination-drug protocols.

The findings detailed in the study include the following observations.

***In Vitro* Fertilization**

The paper outlines difficulties in obtaining data on IVF. In Canada, for example, there is no central reporting of statistics. A significant increase in the percentage of premature, low-weight, and multiple births

has been documented in the United States and Great Britain. Inconsistent use of ratios for reporting makes it difficult to make comparisons among data from clinics, e.g., one source reports on the basis of treatment cycles initiated, another in relation to pregnancies per ovum retrieval or embryos transferred. In addition, unless reporting is compulsory, programs with poor results may not submit their statistics.

Risks associated with this technology are also reviewed: ovarian hyperstimulation syndrome, allergic reactions, infection, and ectopic and multiple pregnancies. These risks may result from drugs used, invasive procedures, physical manipulation of gametes and embryos, and numbers of embryos transferred.

Psychosocial and economic stresses on couples and their relationships resulting from this technology are noted, especially with respect to the reported effects of stress on semen quality.

Gamete Intrafallopian Transfer

The results reported for gamete intrafallopian transfer are generally superior to those for IVF, although it is not known whether this is due to a superiority of the technique in promoting fertilization and early embryo development in the tube, or to patient selection.

This procedure does pose risks to the patient: ovarian hyperstimulation syndrome and all the known and possible side-effects associated with superovulation induction drugs; a substantial risk of multiple pregnancy; risks associated with anaesthesia and surgery required for laparoscopy; and post-operative pain and possible trauma to the fallopian tubes. However, the study notes that advances in ovum retrieval techniques, such as ultrasound, have virtually eliminated the need for general anaesthetics for most assisted conception technologies.

Male Factor Infertility

The study sketches the standard techniques, and the risks involved, for treatment of moderate to severe male factor infertility. It is noted these techniques may contribute to even greater psychosocial stress for couples, as the advent of each new micromanipulation method brings new hope, whereas the results are not encouraging: many centres experimenting with these techniques report no pregnancies.

Embryo Cryopreservation

Although animal research indicates that frozen cleaved embryos may be maintained for many years with little effect on survival rate and pregnancy potential, long-term evaluation of children born as a result of frozen-thawed embryo replacement is needed to assess whether any sequelae occur. Results of embryo replacement for livestock suggest there are few, if any, physical dangers. However, cryopreservation of human embryos involves a number of ethical and legal issues regarding the fate of frozen embryos should the circumstances of one or both parents change.

Ovum Cryopreservation

In principle, successful ovum cryopreservation has the potential to allow much flexibility in standard infertility treatment programs while minimizing many concerns arising from other techniques; but successful freezing of mammalian ova remains problematic and controversial. Although there is ongoing research into safer methods of ovum freezing, the clinical use of ovum freezing remains limited and contentious.

New Directions

The study outlines experimental techniques that lend insight into the genetic constitution of the fertilized ovum with respect to normal development, detection of abnormalities, diagnosis of inherited disorders, and the selection of embryos on the basis of sex. New directions for “old” technologies and limitations of the technologies and their applications are summarized.

Risks

The last section is devoted to the risks — physical, psychosocial, economic, legal, and ethical — associated with different aspects of assisted reproductive technologies. These risks affect not only women and couples, but children conceived via reproductive technology, gametes and embryos, and health care providers.

Introduction

Major advances in the biology of human reproduction during this century have allowed the development and application of a variety of medically assisted reproductive technologies over the past 20 years. Coincidental discovery of methods to stimulate ovarian function, to regulate follicular growth and ovulation, and to allow the fertilization of mammalian oocytes and embryo growth *in vitro* has permitted the development of innovative clinical approaches to the treatment of subfertile and infertile men and women. Such clinical innovations include ovulation induction using powerful drugs, *in vitro* fertilization (IVF), gamete intrafallopian transfer (GIFT), micromanipulation of sperm cells and embryos, and the cryopreservation of human gametes and embryos. Keeping abreast of the current “state of the art” of these new clinical technologies poses a formidable challenge, owing to the rapid proliferation of the variety and application of such techniques. More difficult yet is to assess the personal, social, ethical, and legal impact of these technologies.

The purpose of this monograph is to describe and explain the principal “building blocks” of the array of assisted reproductive technologies. The research methodology consists of a review of available on-line data bases (MEDLINE, SOCIAL SCISEARCH, and BIOETHICSLINE from the Kennedy Institute). These sources were searched to March 1992. This information was further elaborated by discussion with key informants — clinicians,

clinical scientists, and researchers; this was particularly useful in tapping into those clinical practices and research directions that are currently “pre-publication.”

It is important to note that section headings within this text have been the subject of full book-length analyses, and many of the subheadings deserve to be, or have been, the sole topics of scholarly review papers. Thus, the aim of this paper is to provide a review that is comprehensive but not exhaustive. This work raises key areas for further elaboration. For example, only one section is devoted to technological approaches to male infertility. It is clear that “male factor” infertility is poorly understood and has been somewhat neglected as a research pursuit, and this apparent gender asymmetry is merely noted. However, the “treatment” of the female partner (by ovulation enhancement, artificial insemination, IVF, and other procedures) for male infertility raises important sociological and feminist issues. Further, the dollar costs, both to individuals and to the health care system, are key to evaluating assisted reproductive technologies; these costs may vary widely from centre to centre, practitioner to practitioner, and in relation to the specific clinical histories of those treated.

Critical analysis of these varied issues is simply beyond this paper. Where appropriate, ethical and legal concerns are identified in relation to specific technologies or interventions, and to the various “players” — patients, their families, and caregivers. These are simply noted, again, since discussion of these many difficult issues lies outside the scope of this text.

Part 1. Ovulation Induction

Background

The induction of controlled multiple follicular development is an integral aspect of most assisted conception technologies. The reason for this lies in the extensive clinical evidence that replacement of more than one embryo (or ovum) results in significantly higher chances that at least one embryo will proceed to a successful pregnancy.¹ Additionally, where enough embryos are created on a given cycle, cryopreservation of the “surplus” embryos allows for replacement on a future cycle, thus improving the overall pregnancy potential derived from one cycle of treatment such as IVF. Ovulation induction is also used in conjunction with artificial insemination: the rationale is the same — multiple ovulation on a given cycle increases the opportunity for at least one ovum to undergo fertilization and implantation.

In the normal female reproductive cycle, there is ongoing follicular development from primordial through atretic stages. In a given cycle, however, usually one follicle proceeds to maturation, in response to the

early rise in follicle-stimulating hormone (FSH) and increasing estrogen synthesis.² Ovulation induction therapy was first developed to stimulate the development and release of one healthy ovum in anovulatory women. More recently, ovulation induction techniques have been elaborated to stimulate the development of multiple follicles in normally ovulating women undergoing assisted reproductive treatments such as IVF and GIFT. The technical challenge in ovulation induction treatment is to initiate a controlled superovulation, whereby sufficient “extra” oocytes are brought to maturity, but hyperstimulation of the ovaries is avoided.

The Normal Reproductive Cycle

Physiology

The normal reproductive cycle in women entails a finely orchestrated series of interactions between circulating hormones and target organs. At the base of the brain a tiny gland, the pituitary, secretes hormones that stimulate the ovary. In turn, the pituitary responds to hormonal feedback from the ovary and inputs from the brain's hypothalamus. Known as the master gland, because it controls many hormonal secretions, the pituitary may release both FSH and luteinizing hormone (LH), and these hormones are central to normal reproductive cycling.

The first part of the cycle is known as the (early) “follicular phase”: FSH released into the circulation causes a cohort of ovarian follicles to initiate development. The late follicular phase commences some seven to eight days prior to LH release. Estrogens produced by developing follicles provide a “negative feedback” loop to the pituitary, so that FSH secretion diminishes. These biochemical events signal the pituitary to release LH in a surge just prior to ovulation (“ovulatory phase”). This signal causes one dominant follicle (usually 20 to 25 mm in diameter) to rupture and release a mature ovum. The event of ovulation arrests the development of the remaining cohort follicles, which proceed to atrophy. LH further acts on the ruptured follicle to form a corpus luteum (yellow body); this marks the onset of the “luteal phase.”

The role of the corpus luteum is to synthesize and release the hormone progesterone. This progesterone stimulates development of the endometrium (uterine lining) so that it is receptive to implantation by a newly fertilized ovum. The corpus luteum supports the uterine lining throughout the second half of the menstrual cycle. If pregnancy occurs, progesterone production by the corpus luteum supports the endometrium and embryo throughout the first trimester of pregnancy until functional placental development is complete. If conception and implantation do not occur, progesterone synthesis declines, and the endometrial lining of the uterus is shed at menstruation. The cycle then resumes.

Hormones of the Reproductive Cycle

Estrogens

These hormones are defined biologically as those capable of stimulating estrus in a rodent. The most important estrogen produced by the ovary is "estradiol" (E_2); the ovary also synthesizes estrone, which is only half as biologically active as estradiol. In the monthly cycle, estrogens are active in (i) stimulation of endometrial growth; (ii) maintenance of vaginal mucosa and acidity; (iii) sensitization of the ovaries to gonadotropins; and (iv) both negative and positive feedback in regulation of gonadotropins. Estrogens are also responsible for the development of secondary sexual characteristics such as breast growth in women, and limiting long bone growth as puberty is completed. The estrogen pathway is key to the action of the ovulation induction drug, clomiphene citrate (CC) (Clomid®).³

Progestins

Progesterone is the most biologically active of these compounds, and has five important biological functions: (i) conversion of the endometrium from a proliferating organ (estrogen effect) to a secretory organ capable of maintaining a new embryo; (ii) alteration of the usually thick cervical mucus to a slippery fluid; (iii) stimulation of breast glands and development; (iv) reducing uterine contraction; and (v) regulation in secretion of gonadotropins.

Follicle-Stimulating Hormone

The function of FSH is to stimulate growth of the ovarian follicle, promoting maturation of the ovum and its supporting cells within the follicle. Administration of pure exogenous FSH stimulates the development of more than one follicle toward maturation, but this stimulation alone will not result in ovulation.

Luteinizing Hormone

It is believed that LH acts synergistically with FSH in follicular maturation and estrogen secretion. Most importantly, the mid-cycle "LH surge" is thought to trigger ovulation, with release of the mature ovum following some 12 to 24 hours after the surge. LH further promotes maintenance of the corpus luteum. The role of LH hormone in luteal function is the focal consideration in pharmacotherapy for luteal phase "defects," or insufficiency of the corpus luteum in maintaining early pregnancy.

Human Chorionic Gonadotropin

Human chorionic gonadotropin (hCG) is produced by the developing embryo and is both chemically and biologically similar to pituitary LH. It is also believed to support the corpus luteum in early pregnancy. Peak levels of hCG are reached by about the ninth week of pregnancy, but

exogenous administration of hCG can be used to induce ovulation in ovarian stimulation treatments with gonadotropins.

Gonadotropin-Releasing Hormone

Gn-RH (also known as LHRH — luteinizing hormone-releasing hormone, and LHRF — luteinizing hormone-releasing factor) is released from nerve cells in the hypothalamus and acts on the pituitary where it serves as the principal regulator for secretion of both FSH and LH. In the normal cycle, Gn-RH is released in pulses and has a very short half-life in the circulation. In these natural circumstances, Gn-RH acts on FSH and LH in a promoting manner. By contrast, continuous infusion or very rapid pulses of Gn-RH will inhibit FSH and LH release by a process known as “down-regulation” of the pituitary. These biological observations are central to the use of Gn-RH analogues in ovulation induction for multiple ova.

Figure 1a below illustrates the events and hormones of the reproductive cycle.

Ovulation Induction Drugs

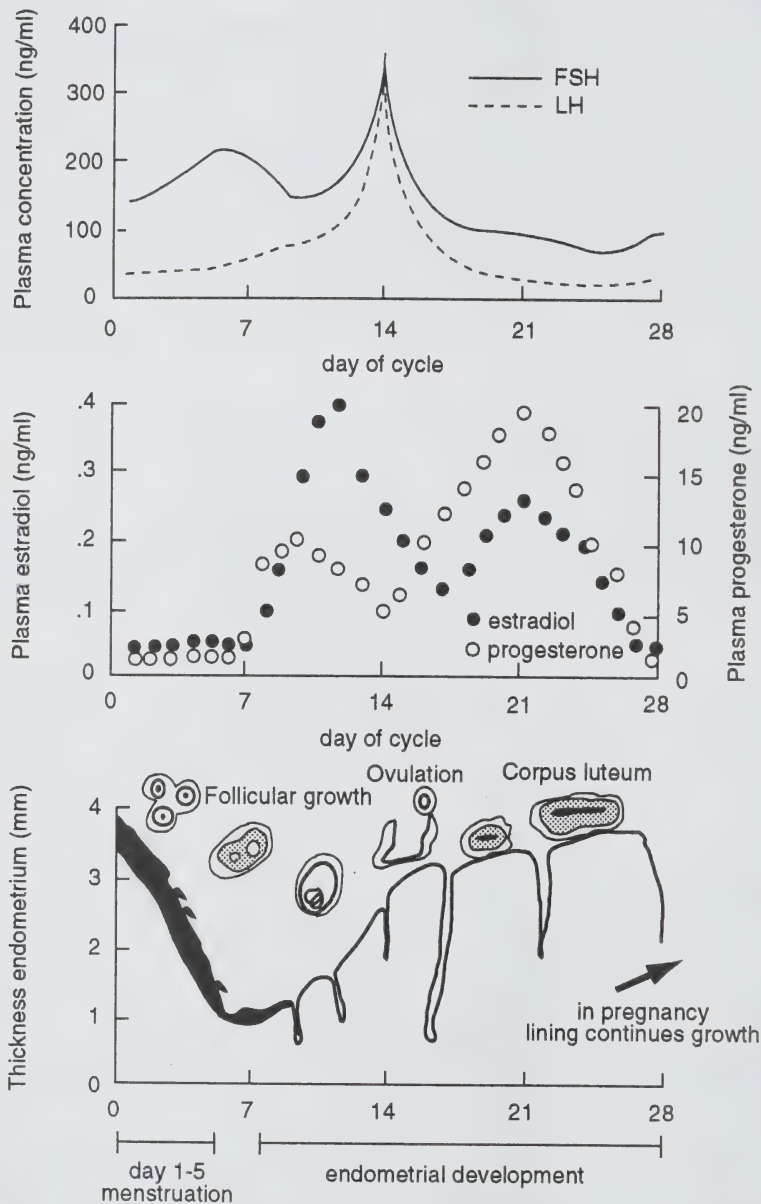
Clomiphene Citrate

The mildest ovulation induction drug, and the simplest to administer, is clomiphene citrate, also known as Clomid[®] and Serophene[®]. It is also the most commonly administered infertility drug. In the anovulatory patient, ovulation fails to occur when the hypothalamus releases too little Gn-RH or no Gn-RH at all. Clomid[®] may be effective in the induction of ovulation in such patients, and is believed to work via an “anti-estrogenic” mechanism.⁴ Anti-estrogenic activity, in simplest terms, involves binding of clomiphene to estrogen receptors. This “blocks” the receptors from detecting circulating estrogens, so that the hypothalamus registers decreased levels of estrogen. The hypothalamus responds to this by stimulating the pituitary to release more FSH and LH. In turn, these hormones may then stimulate follicular development and, finally, ovulation.

Anti-estrogenic manipulation using clomiphene, and related compounds such as tamoxifen,⁵ is no longer confined to the induction of ovulation in anovulatory women, but has been used for some years in the induction of multiple follicular development for assisted reproductive techniques. In the early to mid-follicular phase, administration of clomiphene for IVF, GIFT, or intrauterine insemination is usually 150 mg per day for five days, usually starting at cycle day five. In patients with shorter cycles, treatment may be initiated earlier.⁶

Specific monitoring of follicular development, either by hormonal blood levels or by ultrasound imaging of follicles, is not generally indicated for treatment with clomiphene alone. Such monitoring (discussed later in this paper) is indicated when clomiphene is used in conjunction with other ovulation induction preparations.

Figure 1a. Female Reproductive Cycle



Clomiphene citrate may occasion various side-effects. Some 10 percent of women experience sequelae such as hot flushes as a result of changing hormonal levels, ovarian enlargement with abdominal discomfort and/or pain, and lengthening of the menstrual cycle. Less frequent are reports of breast tenderness, dizziness, headache, nervousness, nausea and/or vomiting, fatigue, and visual disturbances.⁷ The long-term effects of clomiphene treatment are not known; however, case reports of negative effects during treatment, in clomiphene pregnancies, and potential long-term effects are reported in the literature.

A recent Canadian study used ultrasound measurements to examine the effect of clomiphene citrate on endometrial development during treatment.⁸ The authors report significantly thinner endometrium for those patients treated with clomiphene alone. Since the development of a thick endometrium is well associated with increased probability of successful implantation of the early embryo, and ongoing pregnancy, these data may be important in improving pregnancy rates in both IVF and other infertility treatments involving clomiphene administration.

Clomiphene has also been cited as an increased risk factor for heterotopic pregnancies — concurrent uterine and ectopic pregnancies, once considered extremely rare.⁹ Thus, clomiphene treatment should entail early pregnancy monitoring for this complication. Similarly, co-existing molar and viable pregnancy has been reported in a woman treated with clomiphene.¹⁰ Hydatidiform molar pregnancy is the result of a severely abnormal conception, where no fetus develops, but a cystic gestation producing vast amounts of hCG is present. Such a case poses diagnostic and management difficulties, but should be considered as a rare complication of clomiphene citrate therapy.

The effect of clomiphene and combination-drug therapy on early miscarriage and fetal malformation is of wide concern;¹¹ case reports of neural tube defects including anencephaly exist, although some authors maintain that the incidence is no different from that in the general population, when factors such as maternal age are accounted for.¹²

The use of anti-estrogens has been suggested as a possible risk factor in epithelial ovarian cancer, possibly as a result of repeated and exaggerated ovarian stimulation,¹³ and it has been noted that an increase in the incidence of such cancer may not be detected for many years. The use of diethylstilbestrol (DES) to prevent miscarriage in women led to an increased incidence of vaginal, cervical, and uterine malformations in female offspring, and a significantly increased risk of vaginal cancer — adenocarcinoma, clear cell type.¹⁴ Clomiphene and DES bear significant chemical structural similarities. Concerns have been raised that the use of clomiphene may carry similar long-term risks for female offspring. Clomiphene treatment carries an increased incidence of multiple pregnancy, which occurs in some 10 percent of cases; nearly all these pregnancies are twin, with less than 1 percent triplets or more.

Human Menopausal Gonadotropin

Human menopausal gonadotropin (hMG) is the second most commonly prescribed ovulation induction drug, and is also known by many as menotropin, or Pergonal[®]. This drug provides a 1:1 ratio of biologically active FSH and LH, and is prepared from an extract of urine collected from menopausal women. Since FSH and LH are rapidly degraded by the stomach, hMG must be administered by injection. hMG acts directly on the ovary to recruit and stimulate development of several follicles.¹⁵ Menotropin therapy may be used alone, or in conjunction with preparations including clomiphene (CC/hMG), hCG, and Gn-RH analogues, which are discussed later in this section. Anovulatory and amenorrhoeic infertility are indications for hMG therapy; and hMG induction of controlled superovulation for assisted reproductive technologies such as IVF and GIFT has gained widespread use over the past decade.¹⁶ It is usual to use hCG as an adjunct therapy to trigger ovulation. When used in concert with clomiphene (days five to nine of the cycle), hMG therapy usually begins at day nine of the cycle; hMG therapy alone is initiated several days earlier. Dosages of hMG vary widely from patient to patient, and from program to program. (Although 150 IU is a minimum daily dose, many women receive up to eight times that, owing to the great inter-patient variability in response, and the different goals of various treatment modalities.)

As hMG follicular development proceeds, increasing amounts of estrogens secreted by these follicles may be measured in the circulation. Estrogen monitoring is critical to hMG therapy: first, to identify inadequate ovarian stimulation and, most importantly, to monitor overstimulation that can lead to the ovarian hyperstimulation syndrome. Follicular development is also complemented by ultrasonic visualization of the developing follicles, and affords the opportunity to measure endometrial growth.¹⁷

A number of serious risks are associated with the use of menotropins for ovulation induction and controlled ovarian hyperstimulation for multiple follicular development. Side-effects include ovarian enlargement with abdominal discomfort and/or pain. Occasionally, allergic sensitivity with pain, rash, swelling, or irritation at the injection site is reported. Some women notice an increase in cervical mucus, owing to increased levels of circulating estrogen secreted by the developing follicles. There is a significantly elevated risk of multiple pregnancy with hMG and hMG/combination treatments: a full 20 percent of such pregnancies are multiple conceptions, and three or more fetuses occur in about 5 percent of such pregnancies. Neonatal morbidity and mortality associated with such multiple pregnancies are substantial. The most important risk from hMG treatment, however, is ovarian hyperstimulation syndrome.¹⁸

Ovarian hyperstimulation syndrome is the condition that results from rampant and uncontrolled ovarian stimulation. It is associated with elevated serum levels of estrogens and other hormones including prolactin, testosterone, progesterone, and steroids.¹⁹ The syndrome is characterized by a sudden increase in capillary (the smallest blood vessels) permeability,

resulting in ovarian edema (fluid retention and swelling) and a shift of bodily fluids from the circulation so that blood viscosity (thickness) increases, and fluid is retained throughout bodily tissues. The exact mechanism of the change in capillary permeability is not fully understood, but is thought to be related to increased prostaglandin synthesis in response to increased estrogen.

Mild and moderate cases of ovarian hyperstimulation are managed by rest and monitoring; severe ovarian hyperstimulation is a life-threatening medical emergency. This requires fluid and electrolyte correction, and anti-coagulation is sometimes necessary. Renal failure is a real risk. Surgery to remove a large estrogen-secreting cyst is avoided if possible, since there is significant risk of massive haemorrhage. Sometimes, however, there is no choice but to proceed with the surgery if there is torsion of the cyst, or intra-abdominal haemorrhage due to cyst rupture.

The syndrome, with varying degrees of severity, occurs in approximately 3 percent of hMG cycles.²⁰ A recent case report of ovarian hyperstimulation documented both prerenal failure and severe liver dysfunction; fortunately, this patient did survive.²¹ Some investigators have further suggested that hyperstimulation syndrome may increase risk of future ovarian cancer, although long-term epidemiologic studies are needed to determine if this is so.²²

Menotropins have been implicated in an increased risk of ectopic pregnancy on treatment cycles.²³ Whether this is a result of drugs or simply that these are patients at higher risk for ectopic pregnancy is not clear. Additionally, there is a case report of fallopian tube carcinoma during treatment with combined clomiphene/hMG therapy, although it is impossible to determine if the treatment caused or precipitated the cancer.²⁴

Human Chorionic Gonadotropin

Human chorionic gonadotropin (hCG) (Profasi®) is an essential adjunct to exogenous FSH/LH or pure FSH administration for ovulation induction. hCG actually stimulates follicular rupture and the release of ova. If it is not administered, stimulated follicles usually cease estrogen secretion and atrophy. Ovulation does not occur. In only a small number of cases do women stimulated with gonadotropins ovulate without the hCG signal, in response to an endogenous LH surge. An exogenous hCG signal is almost always required to initiate ovulation. As with FSH/LH and pure FSH preparations, it is necessary to administer a single dose of hCG by injection (5 000 IU). Side-effects include ovarian tenderness as multiple follicles rupture, and occasional local tenderness and inflammation at the injection site.²⁵ In some ovarian stimulation artificial insemination programs, a second dose of hCG is administered several days after the usual mid-cycle dose: the rationale is that this may prompt follicular rupture if the first dose has not been effective, and may "boost" early luteal support. Such protocols demand careful attention to possible spurious results in the biochemical determination of early pregnancy: plasma hCG is the most

accurate marker for early pregnancy, but late administration of hCG may lead to a "false positive" biochemical determination of pregnancy.

Gn-RH Analogues

Naturally occurring Gn-RH regulates pituitary secretion of FSH and LH. *In vivo*, Gn-RH is released in short pulses, separated by time, and promotes both LH and FSH release. By contrast, rapid pulsation or continuous infusion of Gn-RH leads to down-regulation of receptors, so that endogenous FSH and LH release is inhibited. These physiological observations have led to the use of Gn-RH analogues or "agonists" (synthetic chemicals that resemble natural Gn-RH both chemically and biologically). Lupron[®], Buserelin[®], and Decapeptyl[®] are brand-name formulations of Gn-RH agonists (Gn-RHa). The rationale for their use is twofold: to control ovarian hyperstimulation by removing the effects of endogenous FSH release, and to prevent the "spontaneous" LH surge that may occur when menotropins are administered. The LH surge is difficult to manage in treatment programs such as IVF and GIFT, since the spontaneous release of LH may result in ovulation before ovum retrieval (requiring cancellation of the treatment cycle), or emergency scheduling of ovum retrieval if the surge is detected before ovulation occurs.²⁶ Incidence of spontaneous LH surge in treatment cycles for IVF and GIFT is reported in the 10 to 30 percent range.²⁷ Thus the application of Gn-RH analogues in conjunction with hMG or combined CC/hMG ovarian stimulation may serve to prevent LH surge and treatment cycle cancellations, enhance convenience in timing of ovum retrieval procedures, and promote some synchronization of follicular maturation so that ova collected are of more comparable maturation.

Gn-RH analogues may also moderate excessive ovarian response,²⁸ complement optimal endometrial development when followed by sequential progesterone administration, and be used to help synchronize cycles between two women for ovum donation programs.

Administration of Gn-RH analogues is usually by subcutaneous injection (one to two times daily), or by multiple daily inhalations of a nasal spray. The timing and duration of administration depend on whether long or short protocols are used (these are discussed later in this section).

Side-effects of Gn-RH analogues include headache, dizziness, hot flushes, acne, vaginal dryness, decreased libido, fatigue, back pain, breast pain, and weight gain.²⁹ Prolonged estrogen deficiency may contribute to osteoporosis (decreased bone density has been documented in some women undergoing long-term therapy with Gn-RH agonists).³⁰

The risk of teratogenicity from Gn-RH analogues in the circulation during embryogenesis has been raised. A primate study was performed in this connection in which pregnant monkeys were given these drugs throughout pregnancy. The results of the study indicated no discernible ill-effects on the offspring.³¹ However, long-term epidemiologic follow-up is required to ascertain if there is a real risk in humans.

Severe ovarian hyperstimulation has been reported in patients undergoing combined ovulation enhancement (or superovulation), although there is some indication that the syndrome may be avoided by discontinuing hCG treatment in identified high-risk patients.³² Prevention of the syndrome remains a challenge for superovulation induction treatment, even where Gn-RH agonists are used.

FSH

Pure human urinary FSH (hFSH) preparations, such as Metrodin[®], have been used in patients with elevated LH levels who are poor responders to clomiphene citrate therapy. These women include those with polycystic ovarian disease (PCOD) who may be at greater risk for ovarian hyperstimulation syndrome owing to excess cystic production of estrogens. Such preparations are given by daily injection; daily blood levels of estrogens are monitored, and ovulation normally occurs within seven to fourteen days of treatment. Side-effects include dizziness, nausea, abdominal discomfort, pain, and rash. Ectopic pregnancies may occur following such treatment, and ovarian hyperstimulation syndrome is a risk. Multiple pregnancies occur in about 17 percent of cases, and include the birth of triplets, quadruplets, and quintuplets.³³

Combination-Drug Protocols

Various combination-drug protocols have already been alluded to: the most common are clomiphene citrate/gonadotropins (CC/hMG), hMG/hCG, and clomiphene/gonadotropins/Gn-RH analogues (CC/hMG/Gn-RHa).

CC/hMG is used for both ovulation induction and ovarian hyperstimulation in intrauterine insemination, IVF, GIFT, and GIFT variant programs. CC is usually administered from days five to nine of the cycle, and hMG from day nine, until follicular maturity is reached — either through hCG administration or due to a spontaneous LH surge. Gn-RHa may be used in either “long” or “short” protocols.³⁴

The long protocol for Gn-RHa treatment yields fairly “stereotypic” follicular responses and is relatively easy to monitor; it is also considerably more costly than the short protocol. Long protocols are preferable where there is a history of increased risk for ovarian hyperstimulation, and for PCOD patients. The long protocol entails Gn-RHa administration, usually five to ten days prior to the expected onset of menstruation, followed by four ampules of hMG per day (600 IU) from days one through four of the cycle. Depending on estrogen levels, anywhere between zero and ten ampules of hMG are administered from day five through induction of ovulation with hCG administration (5 000 IU), usually around day nine or ten. These protocols often include twice-daily administration of progesterone by vaginal suppository during the luteal phase, to provide “luteal phase support.”

In the short protocols, suppression of endogenous LH and FSH occurs after initiation of follicular stimulation. Usually, an “artificial” cycle is initiated by administration of progesterone (10 mg twice daily) for 10 days.

“Menstrual” bleeding generally occurs within two days of progesterone withdrawal. Gn-RHa is started on day one, and hMG (two ampules — 600 IU) is given from day three to day five. From day five, hMG is adjusted from zero to ten ampules per day, depending on estrogen measurements. Induction of ovulation is initiated by hCG (5 000 IU) around day 10. Luteal phase support may be provided as in the long protocol.

The terms “poor responders” and “problem patients” have been used to describe patients who fail to respond optimally to conventional CC/hMG protocols, who have conditions such as PCOD, or who are >38 years of age. “Poor responders” tend to require increasing amounts of hMG, but often do not respond with a greater yield of oocytes and embryos.³⁵ This is seen both in patients >38 years and in a subset of patients <38 years of age. Combination Gn-RHa protocols are effective in increasing chances of pregnancy for patients in these groups. PCOD patients represent another clinical challenge, since such women are at higher risk for ovarian hyperstimulation, and long course Gn-RHa therapy may give the best results in this group.³⁶

For a schematic overview of the actions, drug classes for ovulation induction, and relationship to the menstrual cycle, see Figures 1b and 1c.

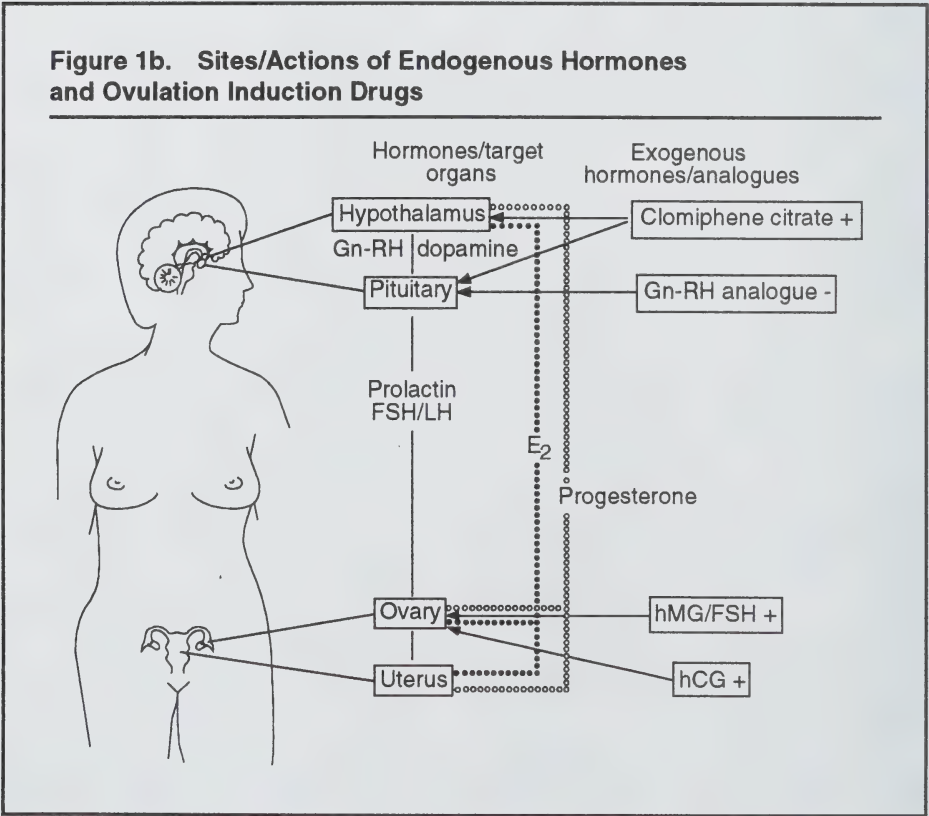
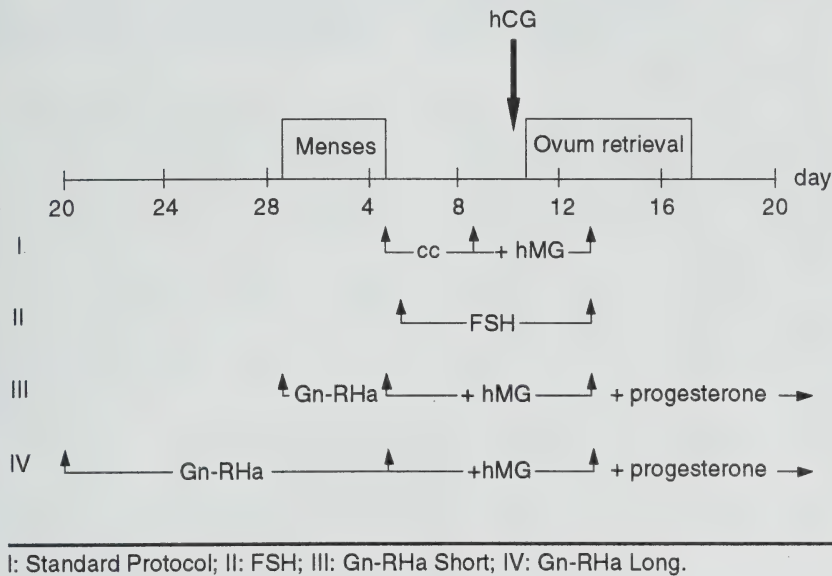


Figure 1c. Stimulation Protocols and the Menstrual Cycle



Part 2. *In Vitro* Fertilization

IVF refers to those technologies that permit conception — the uniting of human ovum and sperm cell — to occur outside the human body under controlled laboratory conditions. IVF was first developed to allow treatment of infertility related to irreparable damage of the fallopian tubes in otherwise healthy women. Tubal reconstruction and artificial tubal grafts had been attempted before the first successful human IVF attempt, and tubal reconstruction continues to play some role in the treatment of infertility. Today, the indications for IVF applications in infertility treatment enjoy a far broader scope than simple tubal disease. The purpose of this section is to describe those applications, provide a step-by-step description of the practice, and summarize usage, results, and risks.

Indications

Historically, IVF was developed to overcome fallopian tube disease as a cause of infertility. This disease may result from prior ectopic pregnancies, pelvic inflammatory disease, endometriosis, adhesions from pelvic surgery, or peritonitis resulting from ruptured appendix. Tubal factors are the cause in approximately 25 percent of women who experience infertility. These patients are the largest group (about 50 percent) of those undergoing IVF treatment.

IVF is an alternative to tubal reconstruction therapy, and its introduction has narrowed the indications for attempt at surgical reconstruction. A recent study from a Norwegian hospital indicates their IVF program not only reduced numbers of tubal reconstructions performed, but improved chances of pregnancy for tubal indications with significant dollar savings.³⁷

The past decade has seen a substantial broadening of the scope for IVF in the treatment of a number of infertility and subfertility conditions. Women with endometriosis account for some 25 to 35 percent of patients undergoing IVF. Endometriosis describes a condition whereby endometrial tissue (the uterine lining) is found outside the uterus. Focal sites of the tissue (endometrioma) may be found throughout the pelvis — including the tubes, ovaries, and bowel. Such tissue responds to the hormones of the monthly cycle, so that endometrioma may undergo growth and bleeding each month. This can cause severe and chronic pain, and result in infertility via tubal obstruction, pelvic adhesions, or direct effects on the ovary. Fertility may be a problem even when apparently few and mild endometrioma are present.³⁸ Whether mild endometriosis causes infertility, however, is not clear, since endometriosis also occurs in women who are fertile.

IVF may also be indicated for the treatment of ovulatory failure, usually defined by oligomenorrhoea or amenorrhoea (absent or scanty menstruation)³⁹ and primary ovarian failure (using donor oocytes on synchronous cycles).⁴⁰

Cervical mucous “defect” or “dysfunction” refers to obvious abnormality of the pre-ovulatory mucus, usually due to surgical damage such as cauterization, or mucus of normal appearance that is unreceptive to sperm. Intrauterine insemination (IUI) is the first treatment for such cases, although there may be a small role for IVF⁴¹ where IUI fails.

Male factors account for some 40 to 60 percent of all infertility. There are few treatments for male infertility, and each of these treatments (including IVF) is limited in success. The rationale for using IVF lies in a theoretically improved chance of fertilization, by bringing the ovum and washed sperm in close proximity *in vitro*.⁴² More recently, IVF incorporating micromanipulation of both ovum and sperm cells has been used to facilitate fertilization. These techniques are detailed in Part 5.

Unexplained infertility provides a final category where IVF is attempted. Unexplained infertility is simply a condition of prolonged failure to achieve pregnancy (usually >2 years), and one in which no contributing physiological mechanism can be determined. Recent data suggest that assisted conception techniques such as IVF and GIFT hold the greatest promise for such couples, with only marginal benefits derived from ovarian hyperstimulation and IUI alone.⁴³

Ovulation Induction

Multiple follicular development with collection of more than one oocyte is the goal of ovarian stimulation for IVF. Most women undergoing IVF ovulate normally, but there are several technical reasons for wishing to augment this response in IVF treatment programs. First, there is sound clinical evidence that the greater the number of embryos replaced on a treatment cycle, the greater the chance that at least one of these will be implanted and continue as a successful pregnancy. It is believed that the mechanism for this enhanced implantation rate is linked to the magnified release of early embryo hormones and growth factors, where more than one embryo is present. These humoral factors have a direct positive effect on endometrial receptivity, thus improving chances for implantation to occur. Clearly, the benefits of exploiting this phenomenon must be balanced with the serious risks of multiple pregnancy, particularly those involving more than twins.

Multiple oocyte retrieval may allow for greater exploitation of a given IVF treatment cycle, where embryo cryopreservation is available. In such programs, "surplus" embryos may be frozen and then thawed for replacement in a future cycle. Thus, using the embryos frozen from one treatment cycle, a patient with several embryos may be able to derive several cycle chances to become pregnant.

A variety of drug regimens have been used to stimulate follicular development for IVF: CC, CC/hMG, hMG alone, hFSH alone, hMG/hFSH, and Gn-RHa protocols.⁴⁴ CC/hMG combination therapy is probably the most common; CC/hMG leads to an enhanced effect compared with CC, in terms of peak estrogen levels, follicle number, oocytes recovered, and fertilization-cleavage for embryo transfer.⁴⁵

Gn-RH analogues may be used in the management of patients with polycystic ovarian disease, with a history of ovarian hyperstimulation syndrome, or who are "poor responders." This class of drugs is also used to program cycles for convenience in treatment: to avoid ovum recovery procedures on weekends; to limit ovum retrieval to days when operating theatre time is available; or to synchronize women's cycles for ovum donation.⁴⁶ Regardless of the ovarian hyperstimulation protocol employed, ovarian hyperstimulation syndrome remains a potentially life-threatening complication of these treatments. This danger demands rigorous moni-

toring of follicular growth, and implies an important consideration for clinicians obtaining informed consent for IVF procedures.

The dollar costs, inconvenience, and risks in ovarian hyperstimulation have caused resurgent interest in "natural cycle" IVF in recent years. Since many women undergoing IVF actually cycle normally (e.g., those with tubal disease, or endometriosis), it is possible for an experienced clinician to attempt retrieval of an oocyte from the dominant follicle prior to ovulation. This ovum is then fertilized *in vitro* using standard laboratory technique, and the embryo is replaced. One further advantage of this approach is that the embryo is replaced to an endometrium unaffected by artificial hyperstimulation. Several centres report successful embryo replacement and ongoing pregnancies using this method.⁴⁷

Monitoring Follicular Growth

Whether exogenous stimulation of the ovaries is used or a natural cycle approach is taken, vigilant monitoring of follicular growth is essential to safe and successful IVF. The administration of gonadotropins (hMG, hFSH) necessitates daily monitoring of estrogens: first, to assess the effectiveness of the dosage in stimulating follicular growth and, second, to determine if there is any risk of uncontrolled ovarian hyperstimulation. Measurements of estrogens may be made either using plasma (from blood collection) or from 24-hour urine collection. Frequent measurement of LH in either the blood or urine (morning sample) is indicated to detect an LH surge, in both stimulated and natural cycles, since oocyte recovery must be attempted within 24 to 36 hours of the first detection of the surge. Plasma progesterone is also monitored in many programs; rising progesterone may indicate approaching ovulation and reflects endometrial development. Inadequate progesterone may be an indication for luteal phase support (using vaginal progesterone suppository) after embryo transfer.⁴⁸

Ultrasound measurements of follicular number and size, in addition to endometrial thickness, are used in both stimulated and natural cycles for IVF. Adequate estrogen levels, in conjunction with ultrasound verification of a follicle at least 17 mm in diameter, are indications for the administration of hCG in stimulated cycles. Ultrasound imaging may be by either transabdominal or transvaginal approach: the transvaginal approach is generally preferred, since it does not require the patient to have a full bladder, and tends to give better imaging of the non-pregnant pelvis.⁴⁹ In experienced hands, ultrasound measurements may be performed only once or twice during a cycle, unless there is indication of a high risk for poor ovarian response, or for ovarian hyperstimulation. Some programs use ultrasound measurements on a daily basis, but this adds substantially to the dollar costs of the treatment cycle.

Ovum Retrieval

The collection of oocytes may be by laparoscopic, transvaginal, or transabdominal (transvesicular) approaches. Laparoscopy requires general anaesthesia; inflation of the abdominal space by carbon dioxide; and the insertion of holding forceps, laparoscope, and aspiration needle through small cuts in the umbilicus and just above the pubis. Ultrasound-assisted collection of oocytes may be made by either transvaginal approach or transabdominally; ultrasound transducers are used to visualize the ovaries and ripe follicles, and to insert an aspiration needle into each follicle. Ultrasound-guided retrieval has the advantage that no general anaesthetic is required, although sedation and pain relief are usually given.⁵⁰ These procedures are described in detail in Part 4.

Follicular fluids, and any aspirated flushes, are quickly examined under microscope by laboratory staff, and oocytes are rapidly transferred to pre-warmed culture media in labelled test tubes or small dishes. Time is of the essence, since oocytes are exquisitely sensitive to even small changes in temperature and pH (acidity). Retrieved oocytes are immediately placed in incubators controlled for temperature, humidity, and pH.⁵¹

Ovum Fertilization and Embryo Culture

A variety of culture media are used in different IVF fertilization programs. Culture media provide the essential nutrient bath for oocytes and embryos, and are composed of a variety of salts, sugars, amino acids, and antibiotics. "Ham's F-10" and "human tubal fluid (HTF)" are probably the media most commonly used. Human tubal fluid is actually prepared in the laboratory (or may be available commercially), and is an artificial tubal fluid, based on chemical analyses of true human tubal fluid. HTF is a simple culture medium, with fewer constituents than Ham's F-10. The rationale for its development is simply that this is the type of liquid environment in which natural fertilization and early embryo development occur.⁵²

Most culture media for IVF are supplemented by sera (10 percent), obtained either from the patient (maternal serum) or from blood collected from donor umbilical cords. The former method has lost some popularity in recent years, due to concerns over possible HIV infection. Maternal serum is now the preferred supplement, except in those cases where the woman may have circulating antibodies to her partner's sperm.

Following oocyte collection and transfer to the incubator, a semen specimen is collected from the male partner. Where semen parameters are within normal ranges, the specimen is then prepared by a sperm-wash method. Sperm wash entails allowing liquification of the sample (occurs in 20 to 30 minutes), addition of culture media with serum, and centrifugation (high-speed spinning). This wash is then removed, leaving a tiny pellet of mixed cells (sperm and white blood cells) in the test tube. A small volume

of fresh medium is placed over this and, over a period of some 30 minutes, the healthiest sperm have "swum" out of the pellet into the overlay. This volume is then collected, and a drop examined to determine concentration of sperm cells and assess motility.

Some four to twelve hours after oocyte collection, a tiny drop of this sperm solution is added to each oocyte (about 100 000 sperm per egg), and the oocytes are returned to the incubator. Delaying insemination is critical, since collected oocytes undergo spontaneous maturation in culture, and insemination within two hours of collection is associated with poor fertilization rates.⁵³ Where sperm numbers and/or function are suboptimal, a variety of other semen preparation techniques may be used. These techniques are discussed in Part 5.

The following day (within 20 hours of insemination) each oocyte is examined under the microscope, and any adherent cumulus cells are dissected away. This allows visualization of the two pronuclei if normal fertilization has occurred, and this is recorded in the laboratory notes. Occasionally, more than one sperm cell enter the ovum (polyploidy, or polyspermy), and this is noted so that the embryo is not replaced.

The third day of the IVF process involves assessment of each embryo for cell division, quality of each cell (transparency, regular shape, equal size), and the presence of fragments. A "quality" embryo has undergone at least two divisions (to the four-cell stage), has transparent cells (blastomeres) of equal size, and has few or no fragments.

Embryo Transfer

Generally, the "best" embryos, according to the parameters above, are chosen for replacement on day three. In rare cases where ovarian hyperstimulation is a threat, or there is indication of poor endometrial development, the best embryos may be frozen for replacement on a later cycle. A number of guidelines have been developed regarding the maximum number of embryos that should be replaced: the American Fertility Society and Fertility Society of Australia recommend a maximum of four embryos. Centres with successful embryo freezing programs may replace only two embryos, to minimize the maternal morbidity and neonatal morbidity and mortality associated with multiple pregnancies.⁵⁴

Embryos are usually transferred to the uterus using a fine catheter to traverse the cervical canal; once the catheter is in place, the embryos are injected into the uterine cavity along with a very minute quantity of culture media (+20 percent serum). The disadvantages of this system include uncertainty as to the position of the catheter tip, and the possibility of introducing micro-organisms.⁵⁵ Results may depend on the skills of the operator: a recent report cited a difference of 22 percent in the pregnancy rate for two clinicians performing embryo transfer in the same IVF program (46 percent clinician "A"; 24 percent clinician "B").⁵⁶ Surgical transfer of embryos using the laparoscopic approach and ultrasound-guided transfer

to the fallopian tubes are also used. The transcervical catheter method remains the most popular approach, since it is relatively convenient and usually pain-free.

Frequency of Use

Worldwide, some 130 million women were aged 19 to 35 in 1990, and it is estimated that perhaps 7 to 8 percent of these were infertile or subfertile. Thus, the global population of infertile women is at least 10 million, and about 700 000 women are expected to enter this pool over the next decade.⁵⁷ Access to IVF for such women is limited by a number of factors: medical indications, socioeconomic status, geography, and religious and cultural norms. Since only a handful of IVF centres report statistics to central agencies, and most of those only in recent years, it is difficult to estimate how many women have undergone such procedures worldwide. The proliferation of profitable IVF centres, particularly in wealthy industrialized nations, and chronic waiting lists at centres with either limited access or excellent results, suggest there is a continued demand for this service. The broader scope of infertility and subfertility indications for IVF also implies that the use of these techniques will continue to expand, at least for the next five to ten years.

Results

There is no central reporting of IVF statistics in Canada. However, data that may be comparable are available from registries in the United States, Great Britain, and Australia.

In the United States, 1989 results are available:⁵⁸ of 18 211 stimulation cycles for IVF, ova were collected in 85 percent, and about 88 percent of these resulted in an embryo transfer. Clinical pregnancies occurred in some 16 percent of these (2 811 pregnancies), with 2 112 deliveries (15.6 percent delivery rate per embryo transfer). In Great Britain, 1 581 children were born between 1978 and 1987 as a result of IVF or GIFT. Data on the relationship of this number to number of treatment cycles initiated are not available, but a significant increase in the percentage of premature, low-weight, and multiple births has been documented.⁵⁹ Australia and New Zealand statistics for IVF and GIFT pregnancies are compiled in detail by the joint annual efforts of the National Perinatal Statistics Unit in Sydney, and the Fertility Society of Australia.⁶⁰ In 1988, 7 930 IVF treatment cycles resulted in 1 065 clinical pregnancies (13.4 percent) with 743 live births (9.4 percent).

The following difficulties are present when comparisons are made among such groups of data: (1) there is rarely consistent use of ratios for reporting — one source reports on the basis of treatment cycles initiated, another in relation to pregnancies per ovum retrieval or embryos transferred; (2) where such reporting is not compulsory, programs with poor results may simply not submit their statistics. For example, the U.S.

results cited here indicate a very high success rate, despite much anecdotal evidence that there are a number of U.S. centres where no or few pregnancies have ever been achieved. It is not unreasonable to speculate that such centres do not report to the registry. Such manipulation of statistics is important at the clinical level, where patients must decide in an informed way whether or not to pursue treatment. An unscrupulous program may inform patients of national or international results, while omitting information about the success or failure rate in their own hands.

Specific Risks

A variety of risks associated with IVF technology have been documented or postulated. These risks may result from the drugs used, invasive procedures, physical manipulation of gametes and embryos, and numbers of embryos transferred; they may also include psychosocial and economic stresses.

Ovarian hyperstimulation syndrome, described in the previous section, is thought to occur in approximately 3 percent of cycles where exogenous human gonadotropins are used to stimulate follicular growth. The syndrome may be mild or moderate, or, in rare cases, may be severe and life-threatening. The risk of ovarian hyperstimulation syndrome is a real risk in IVF treatment cycles where there is exogenous ovarian stimulation: acknowledging this risk is a key aspect of disclosure of information to obtain informed consent, and a risk that may make some women more comfortable with pursuing only "natural cycle" IVF treatment.

IVF may also fail if ovulation induction is unsuccessful (in anovulatory women), or if follicular growth appears adequate (based on plasma hormone concentration and ultrasound visualization of developing follicles) yet ovum collection is unsuccessful. This may arise as a result of the "operator," or because a spontaneous LH surge is undetected. Therefore, cancellation of cycles, whether due to the threat of hyperstimulation syndrome, inadequate response to stimulation therapy, or failure to retrieve ova, is an inevitable aspect of IVF programs. Even when every early step is successfully accomplished, there is no guarantee of a successful pregnancy, and there are many steps at which failure ensures that no pregnancy is possible.

A variety of other risks have been noted. For example, a program using bovine serum supplementation of embryo culture media noted increased allergic reactions among patients, and immune response to the bovine serum was documented. Analysis of patient data suggested that Gn-RH analogues may facilitate such immune responses.⁶¹ Also, with IVF, there is a possibility of infection from repeat injections, invasive oocyte retrieval, culture conditions, and embryo transfer. HIV and hepatitis viruses may be transmitted by using non-maternal human serum, or through the donation of gametes and embryos.⁶²

There is much interest in determining whether the oocytes and embryos resulting from IVF are genetically normal, or if there is an

increased incidence of anomalies. Abnormalities have been documented in ova that failed to fertilize *in vitro*, and in those that had fertilized but failed to undergo division.⁶³ These anomalies included oocyte immaturity, polyspermia, or the formation of many sub-nuclei or one large nucleus. Studies of preimplantation IVF embryos have revealed genetic defects including trisomies and mosaics. However, these defects are also common in early spontaneous losses in “natural” pregnancies; it is not known whether the genetic defects observed reflect the usual pattern of miscarriage, which cannot always be evaluated. Such defects may account, in part, for the early abortion rates seen in IVF pregnancies.⁶⁴ There is also evidence that sera from patients given various anaesthetics for IVF may have a toxic effect on the development of mouse embryos *in vitro*.⁶⁵ At this time there appears to be no overall increased risk for congenital abnormality in infants born as a result of IVF procedures;⁶⁶ the long-term evaluation of such risk will require comprehensive reporting of IVF statistics.

Multiple pregnancy with attendant neonatal morbidity and mortality is a very serious complication of IVF, and the risk of such pregnancy is significantly higher when more than two embryos are replaced at embryo transfer.⁶⁷ The role of embryo cryopreservation in limiting numbers of embryos replaced on any given cycle, and the use of natural cycles, are significant measures to minimize this risk.

Ectopic pregnancies are seen with greater than usual frequency in women having IVF. Whether and how much of this is related to IVF itself is unknown, since this group of women is highly selected and they may have several contributing factors for ectopic pregnancy, including previous tubal disease (it is clear that the transferred embryo may “float” for some days before implantation) and the effects of hyperstimulation on both tubes and the endometrium.⁶⁸ This risk, which is higher than in the general population of pregnant women, underlines the need for careful pregnancy monitoring after embryo transfer, including ultrasound confirmation of a uterine pregnancy. There are numerous reports of ectopic (outside the uterus) and heterotopic (concurrent uterine and outside the uterus) IVF pregnancies, including unilateral twin and bilateral tubal pregnancies.⁶⁹

Finally, the experience of IVF can be a very stressful one for couples, placing strain on their own relationship, and on relationships with family, friends, and employers. It is a treatment that requires many decisions, and presents many opportunities for disappointment. Treatment is, in general, expensive and time-consuming. The effects of stress on semen quality for IVF have been reported: fertilization and embryo cleavage rates are reduced when collected from normozoospermic men under stressful conditions.⁷⁰ Counselling and support services are essential for IVF participants if depression, anxiety, and feelings of loss of control are to be minimized and managed.⁷¹

Part 3. Gamete Intrafallopian Transfer

GIFT is a variant of IVF, developed for application in those patients believed to have at least one normal, functioning fallopian tube. The techniques of ovulation induction, oocyte retrieval, and sperm preparation developed for IVF are necessary elements of this treatment. The rationale for GIFT is quite simple: it involves preparation of the sperm specimen prior to initiation of ovum retrieval, then laparoscopic cannulation of one or both fallopian tubes so that a tiny volume of oocyte and washed sperm solution may be placed directly in the tube. *In vivo*, fertilization is thought to occur in the tube, thus providing the most natural and “ideal” environment for fertilization and early embryonic development to take place. The GIFT approach was first developed for those patients who had undergone reconstruction of surgically blocked fallopian tubes (tubal sterilization). It was hoped that this new technology would minimize costs and the complexity of laboratory organization required for IVF, with its necessity to maintain the fertilized egg. Since fertilization does not occur *in vitro*, GIFT became an important procedure for patients with certain religious and cultural beliefs, because it eliminated some of the ethical dilemmas surrounding IVF.

Indications

The application of GIFT was expanded by Asch et al.: they reasoned that the transfer of gametes directly into the fallopian tube might assist conception where infertility resulted from failure of ovum release, inadequate pickup of the ovum by the fallopian fimbria, failure of the sperm to reach the ovum, or combinations of these factors.⁷² Clinical pregnancies were achieved by this group, and GIFT became a treatment for “unexplained” infertility.

Certain endometriosis patients have also been targeted as suitable candidates for GIFT procedures. The cause of infertility in endometriosis patients is not always clear; in severe cases there may be substantial adhesions and endometrioma associated with any or all of the ovaries, fimbria, and fallopian tubes. In such cases, failure to conceive is understood. In other cases, however, the etiology of infertility in women with endometriosis has not been adequately explained: the lesions appear discrete and “mild,” and may not involve either ovaries or tubes. One study found some 30 percent of women with mild endometriosis have difficulty conceiving.⁷³ Luteinized unruptured follicle syndrome (LUFS) and immunological factors have been suggested as possible mechanisms. GIFT may be used in endometriosis patients where there is no tubal involvement.

Male factor infertility and subfertility are also indications for GIFT. GIFT was used first for those couples in whom “mild” male factor had been identified — usually suboptimal motility, concentration, or some morphological abnormality of sperm. The reasoning for GIFT in such cases

is based on the hypothesis that bringing ova and washed sperm together in the tubal environment will facilitate both fertilization and early embryo development. Early success with this approach led to an expanded list of male factor indications: one recent study reviewed GIFT results with male factors with sperm cell concentration $<20 \times 10^6$, and/or <50 percent progressive forward motility, and/or sperm morphology with >50 percent abnormal forms.⁷⁴ GIFT resulted in a 13.4 percent clinical pregnancy rate for this group of 43 couples, with three live births (6.7 percent delivery rate). Yet another report observes that pregnancy can sometimes be achieved using IVF and GIFT even where the male factor is severe, provided the female partner is very fertile.⁷⁵

Cervical mucous dysfunction, which may incorporate female antisperm antibodies, has been a limited indication for GIFT. Such disorders generally respond to intrauterine insemination technique with or without superovulation.⁷⁶

Ovulation Induction

Since many candidates for GIFT procedures (those with unexplained infertility, cervical mucous dysfunction, male factors) have apparently normal ovarian cycles, superovulation is generally achieved without great difficulty. The rationale for superovulation in this group is the same as in other assisted conception programs. The transfer of more than one ovum or embryo greatly enhances the likelihood that at least one viable conception and implantation will take place. The usual regimen includes clomiphene citrate from days five through nine of the cycle, augmented by hMG from day nine, and the administration of one dose of hCG between days eleven and fifteen, depending on follicular development. In patients with active endometriosis, chemical suppression of the endometriosis for four to six weeks prior to the treatment cycle, and/or pre-treatment with a Gn-RH analogue (long protocol), are considered by some to improve treatment outcome in these patients.⁷⁷

Where embryo cryopreservation is available, patients wishing to undergo combination GIFT/IVF may elect to risk more aggressive or maximal superovulation. In this circumstance, the GIFT procedure takes place as usual, but excess oocytes collected are fertilized *in vitro*, and any resulting healthy embryos are frozen for replacement on a future cycle. The advantage of this approach lies in repeat attempts at pregnancy (from one GIFT transfer of gametes and subsequent transcervical embryo transfer), all derived from one ovarian stimulation/oocyte retrieval cycle.

Conversely, where a patient is known to have good responses to ovarian stimulation and embryo freezing is either unavailable or unwanted, "low-order" stimulation of the ovaries may be attempted. Low-order stimulation may reduce risk of ovarian hyperstimulation syndrome, and minimize both costs and side-effects of ovulation induction preparations.

Monitoring Follicular Growth

As with any assisted conception treatment in which exogenous ovarian stimulation is used, careful monitoring of follicular growth for GIFT is essential to planning hCG administration, detecting a spontaneous LH surge, planning oocyte retrieval, and early detection of an ovarian hyperstimulation syndrome. Whenever exogenous gonadotropins are used, daily assays of estrogens (either from the urine or from blood plasma) are needed from early in the cycle to monitor follicular growth. Daily progesterone levels from plasma may also be measured as an index of endometrial growth and as a marker of impending ovulation. Daily LH assay can detect a spontaneous surge, so that the risk of missed ovulation with failed oocyte retrieval is reduced. Ultrasound monitoring of follicle number and size is performed as in superovulation stimulation for IVF, and provides another window into endometrial development.

Ovum Retrieval

Oocytes for GIFT may be recovered using either the laparoscopic approach or transvaginal ultrasound-guided needle aspiration. Some operators prefer the laparoscopic approach for ovum retrieval, since the laparoscopy will be performed in any case for the intrafallopian transfer of gametes. Still others opt to retrieve oocytes using the transvaginal approach with light sedation and pain relief, since this may significantly reduce the total general anaesthetic time required for the laparoscopic transfer. Unnecessary laparoscopy may also be avoided this way, if oocyte retrieval fails. An additional benefit of transvaginal oocyte retrieval may be gained in patients with severe endometriosis involving the ovaries: laparoscopic manipulation of these ovaries may be technically difficult, owing to the presence of dense adhesions or endometriomas. Vaginal recovery of oocytes bypasses the requirement to "handle" the ovaries, and may result in improved ovum recovery rates.⁷⁸ The advantages of oocyte retrieval, which does not require general anaesthesia, have sparked interest in possibilities for tubal transfer, which could also bypass the need for laparoscopy.

Follicular fluids and "washes" are quickly examined under the microscope for oocytes and, as they are found, are immediately placed in culture media. Culture is supplemented by maternal serum, except in those cases where antisperm antibodies are present. Collected oocytes are maintained in the same controlled incubator conditions as in IVF, with temperature, humidity, and pH carefully monitored, until time of laparoscopic gamete transfer. Extra oocytes may be maintained in culture to be inseminated for IVF and embryo cryopreservation.

Gamete Transfer

The transfer of gametes for GIFT requires the induction of general anaesthesia, and laparoscopic visualization of the pelvis. Carbon dioxide

is used to insufflate the peritoneum via a needle introduced through an umbilical cut. The laparoscope is introduced through this cut. Holding forceps are inserted via a small suprapubic incision. In the laboratory, a sterile catheter is used to take up the ova "sandwiched" between a tiny volume of washed sperm. If only one tube is open, then all the ova for transfer are placed in one sandwich; if both tubes are patent, then two such packets are taken up into the catheter. A maximum of four ova per transfer is recommended, although some centres may replace up to ten.⁷⁹ Using laparoscopic technique, the fimbria are gently grasped so that the gamete catheter can be introduced into the fallopian tube. Once positioned, the small volume of gametes is introduced. Cannulation of the second tube is then achieved, and the gentle injection repeated. In experienced hands, the procedure may be completed in less than 15 minutes. Recovery from anaesthesia is generally rapid and uneventful, and the patient may be returned to a recovery room or ward for a few hours before discharge the same day.

Variants

A number of modifications of the GIFT procedure have been developed. The principal rationale for these lies in the "black box" that GIFT places around the events that lead to treatment failure. In IVF, only those ova that have undergone successful fertilization and cleavage are replaced at embryo transfer: subsequent pregnancy failure must then be attributable to either abnormal or arrested embryo development, or implantation failure. In GIFT, there is no method of determining if normal fertilization and early cleavage has occurred, since these events take place, if at all, in the fallopian tube. Although clinicians attempt to replace the "best" ova, this assessment is based only on gross morphological appearance, and successful fertilization is probably a much better indicator of ovum quality. Further, failure of fertilization is of particular concern when a male factor is the indication for GIFT.

This reasoning led to the development of zygote intrafallopian transfer (ZIFT), which incorporates IVF culture techniques to determine if normal fertilization has taken place. Pronuclear oocytes (zygotes) or early-cleaved embryos may then be transferred to the fallopian tube using laparoscopic technique, one or two days after ovum retrieval.⁸⁰ This technique has also been named PROST (pronuclear oocyte salpingo transfer).

ZIFT, too, has been subject to variants: for severe male factor, fertilization *in vitro* may be attempted using the partner's sperm. If fertilization fails, the cycle is then "rescued" by insemination with frozen donor sperm. Fertilized ova are then transferred to the fallopian tubes at laparoscopy.⁸¹ Based on only four couples, fertilization rates of 70 percent at re-insemination are reported, with two of four ZIFT transfers resulting in ongoing pregnancy. Such small numbers do not allow generalizations about these results, but it is clear that this approach permits couples an opportunity for conception with the partner's sperm, with a backup to

salvage the treatment cycle. The application of such a technique also raises a number of concerns, particularly if it is repeated for couples. The great hope that inspires this very slim chance for conception with the partner's sperm may prevent couples from coming to terms with the male factor infertility. Further, these couples may always experience emotional uncertainty as to whose sperm actually "fathered" a successful pregnancy. Finally, where failure to fertilize related to male factor has been demonstrated *in vitro*, far less invasive and risky use may be made of donor insemination using IUI with or without superovulation.

ZIFT (PROST) has also been used in conjunction with ovum donation for the initiation of pregnancy in patients with premature ovarian failure.⁸² One report describes the uses of donor oocytes and partner's sperm, with laparoscopic transfer of pronuclear oocytes attempted in two women suffering from premature ovarian failure of long duration. Pregnancies were maintained by the administration of low-dose estradiol and progesterone, and both women are reported to have delivered healthy children.

Although some advantages, such as determination of fertilization, may be realized using the ZIFT approach, some researchers feel the most important step to eliminate from GIFT is the laparoscopy. The ultrasound-guided transcervical approach has been used to insert a special catheter into the fallopian tubes, so that pronuclear oocytes can be directly deposited.⁸³ More recently, still another approach has been employed that bypasses both the need for an IVF laboratory and any need for cannulation of the tubes: direct oocyte sperm transfer (DOST).⁸⁴ In this method, vaginal ultrasound was used to collect oocytes, which were placed directly into the uterus with washed sperm using a transcervical catheter. Ongoing pregnancies are reported. The theoretical disadvantage of such an approach lies in its failure to use the "ideal" environment for fertilization and early embryo growth — the fallopian tube. However, if successful pregnancy rates can be documented, DOST may well prove a very useful technique, minimizing invasive procedures, laboratory costs, and ethical concerns for some groups of patients.

Frequency of Use

Global population statistics for female infertility were described in Part 2. Since GIFT procedures require at least one patent fallopian tube, the subset of patients for whom GIFT and its variants may be attempted is even smaller than those who may benefit from IVF. Since the DOST procedure does not require access to fallopian tubes, this variant may be more widely applied in the future. However, pregnancy and morbidity results with DOST are too limited to predict the role it may assume in the battery of assisted conception techniques. Currently, GIFT programs are far fewer than IVF programs. In most cases, GIFT is offered as one service in conjunction with an IVF program. Since IVF and embryo transfer are the

default procedure when a planned GIFT case cannot be carried through, the American Fertility Society guidelines recommend that GIFT be offered only in those centres with IVF laboratory facilities, for example, when laparoscopy reveals that the tubes are not in fact patent, or are inaccessible. IVF laboratory services and embryo cryopreservation are also desirable adjuncts for those cases in which more oocytes are collected than can safely be transferred.⁸⁵ Risks attendant with general anaesthesia and laparoscopy, and the IVF laboratory needed to maximize use of retrieved oocytes (through embryo cryopreservation), suggest that the role of GIFT procedures will remain secondary to IVF.

Results

In general, results reported for GIFT procedures are superior to those reported for IVF. It is not known whether this is due to the superiority of the GIFT technique in promoting fertilization and early embryo development in the tube, or to patient selection (those with "unexplained infertility" or endometriosis). Pregnancy-per-GIFT-oocyte-retrieval-results reported to the U.S. registry in 1987 and 1988 were 21 percent and 25 percent respectively.⁸⁶ It is important to note that these are not clearly identified as biochemical pregnancies, clinical pregnancies, or delivered pregnancies, and further, that registry reporting is voluntary. In Britain, the Medical Research Council working party's summary of IVF and GIFT births does not separate out conceptions resulting from IVF or GIFT, and notes that the survey did not include centres where GIFT alone is performed.⁸⁷ The Australian clinical pregnancy rate for GIFT in 1988 was 27.5 percent per oocyte retrieval, with a live-birth pregnancy rate of 19.9 percent per cycle.⁸⁸

Specific Risks

As with IVF, patients undergoing GIFT procedures are at risk for ovarian hyperstimulation syndrome, and all the known and possible side-effects associated with superovulation induction drugs. The risk of multiple pregnancy with GIFT and variants is substantial: a 1991 report indicates that 16 percent of GIFT pregnancies and 27 percent of ZIFT pregnancies showed multiple conceptions at 20 weeks' gestation.⁸⁹ Neonatal morbidity and mortality and maternal morbidity associated with multiple pregnancy are well recognized, and may carry significant costs to the health care system in addition to the costs of human suffering.

Laparoscopy for GIFT entails some specific risks from anaesthesia and surgery: general anaesthesia carries known risks of severe allergic reaction including anaphylaxis, cardiac arrhythmias, and normal and malignant hyperthermia;⁹⁰ laparoscopy may cause post-operative pain, including severe chest and shoulder pain as a result of the action of carbon dioxide on the diaphragm; and manipulation and cannulation of the fallopian tubes may result in trauma to these very delicate structures, including the development of adhesions.

Part 4. Ovum Retrieval

The first assisted conception programs used laparoscopic retrieval of oocytes, with direct visualization of the ovaries and puncture of the ovarian follicles.⁹¹ Advances in ultrasound technology coupled with the morbidity associated with laparoscopy and general anaesthesia allowed the development of ultrasound-guided techniques of ovum recovery that are widely used in today's assisted conception programs.

Laparoscopy

Laparoscopy requires induction of general anaesthesia: a needle is then inserted via a small umbilical incision and the abdomen inflated by pumping in carbon dioxide (pneumoperitoneum). This insufflation facilitates visualization and manipulation of the reproductive organs. The laparoscope, a fine optical instrument for visualization of the peritoneal cavity, is then inserted through the umbilical incision, and holding forceps are introduced via a small suprapubic midline cut. Thus, the ovarian ligament may be held and manipulated to allow puncture of follicles by a Teflon[®] needle. This needle may be single channelled or double channelled. The double-channelled needles allow flushing of the follicle with collection fluid to dislodge any ovum clinging to the follicle. Follicular fluid from each punctured follicle is aspirated; a foot-operated suction pump applies a vacuum of approximately 100 mmHg. Where no ovum is detected in the follicular fluid, repeated flushes of the follicle with collection fluid may be made, and fluid may be collected from the Pouch of Douglas, since wash fluid containing ova is occasionally aspirated.⁹²

The principal advantage to laparoscopic collection of oocytes is the certainty that the patient does not experience discomfort. Disadvantages include repeated general anaesthetics (since most patients will have more than one attempt at assisted conception), the requirement for a full operating theatre, and additional costs. Laparoscopic oocyte collection is impossible in 5 to 10 percent of patients where severe pelvic and ovarian adhesions are present.

Ultrasound

Ultrasound was first used to visualize human ovarian follicular growth in 1972, but it was nearly 10 years before ultrasound technology was applied in the collection of human oocytes for assisted conception. Transabdominal (transvesicular and transcutaneous) approaches were the first of these. The transvaginal approach is the most commonly used today, with transabdominal retrieval reserved for those few patients whose ovaries are not accessible by vaginal approach.

In transabdominal ovum recovery, the patient is placed in the lithotomy position, and the bladder catheterized and filled with Hartman's solution until the follicles can be clearly seen on ultrasound. Local

anaesthetic is used to infiltrate a small patch on the abdomen, and using ultrasound guidance, a needle is placed through the abdominal and bladder walls, and passed into the ovarian space. Developed follicles are then punctured and may be flushed a number of times until an egg is found.⁹³

Transvaginal ultrasound-guided collection of oocytes is today's standard. Special vaginal ultrasound transducers have been developed that permit clearer imaging of the ovaries and follicles. The transducer is equipped with a needle guide, which stabilizes the aspirating needle and permits it to be moved in and out of the follicles as needed. The patient is placed in the lithotomy position and the vagina swabbed with an antiseptic solution. A sterile latex condom containing ultrasound gel is placed over the transducer, and this is inserted into the vagina. The needle is passed with a quick thrust through the lateral muscular wall of the vaginal vault. The needle tip may then be placed into follicles for fluid aspiration. As with laparoscopic and transabdominal techniques, flushing fluid may be repeatedly passed into and aspirated from the follicles until an ovum is found.

The principal advantage with vaginal retrieval is the clearer imaging of the ovaries, so that it is relatively easy to learn. The discomfort of a full bladder is eliminated, and no abdominal or bladder punctures are made. Vaginal bleeding from the puncture site is the most common complication; this is usually very responsive to pressure at the puncture site. Pelvic infection is possible, especially for patients with ovarian cysts that are punctured at the time of retrieval. Prophylactic antibiotics are an important precaution.⁹⁴

Finally, ultrasound-directed oocyte collection eliminates the need for either general or epidural anaesthesia. Pre-operative administration of an oral benzodiazepine such as lorazepam (1 mg, one hour prior to the procedure), with intravenous diazepam (2.5 to 15 mg) and pethidine (25 to 150 mg), usually provides adequate pain relief, although some patients will have a lower threshold for frank discomfort.⁹⁵ Paracervical block with or without sedation is also used in some centres.

Advances in ovum retrieval techniques have virtually eliminated the need for general anaesthetics for most assisted conception technologies. Further, they may substantially reduce costs, and are more convenient when performed as day-surgery procedures.

Part 5. Sperm Preparation/Manipulations for “Male Factors”

Popular attention to the assisted reproductive technologies has focussed on those aspects of treatment that directly involve the woman under treatment. Preparation and manipulation of the male gametes

(sperm cells), however, represent an area of active research and clinical experimentation critical to the success of any assisted conception therapy. This section describes standard techniques for semen preparation (where semen parameters are within normal ranges), and reviews those techniques that may be attempted where moderate to severe male factor infertility contributes to or is the sole cause of infertility for a couple wishing to conceive.

Sperm Wash for IVF and GIFT

Semen collection for assisted reproduction treatments such as IVF and GIFT is usually by masturbation. Specimens are produced by the male partner and collected in a sterile specimen jar. Ideally, the specimens are produced at the treatment centre, so that they may be delivered to the laboratory within a short time, and without exposure to damaging environmental factors such as cold. In some instances, the specimen may be collected by use of a thick latex condom at intercourse: the choice of condom is critical, since many are manufactured with materials that are spermicidal. In some cases, a pinprick hole is made at the top of the condom (away from the collection tip) to allow for a (highly) theoretical possibility of conception as a result of intercourse. This system is reserved for those couples with religious or cultural taboos against either masturbation or fertilization *in vitro*.

Once received in the laboratory, the semen specimen is incubated for 30 minutes at body temperature, permitting natural liquification of the specimen. For standard "swim-up" procedures, a small aliquot of semen (1 ml) is then placed in a sterile test tube, and warmed culture medium is added. The tube is gently inverted several times, as a "wash" of the cells. This wash helps to remove factors in the seminal plasma that may actually inhibit fertilization. The test tube is then centrifuged (~250 g) for 10 minutes. This causes a pellet containing the cells of the ejaculate to settle at the bottom of the tube. The supernatant (fluid over the pellet) is gently aspirated so as not to disturb the pellet. A small volume of fresh serum-supplemented medium is then laid over the pellet, and the tube returned to the incubator for 20 to 30 minutes. During that time, the fastest and strongest sperm cells "swim" out of the pellet into the overlay. Thus the overlay can be collected, providing a washed sample of the "best swimmers" for insemination or gamete transfer.⁹⁶

A tiny drop of the washed specimen is used for an assessment of sperm function: concentration of sperm cells, percentage of sperm cells exhibiting progressive forward motility, and the percentage of sperm with gross abnormal morphology (appearance). Calculations based on the concentration of progressive sperm cells are used to determine the volume required for insemination *in vitro* or transfer, usually about 100 000 motile sperm per oocyte. Fertilization rates using this approach are in the order of 70 to 85 percent of oocytes, where semen parameters are within normal

ranges. In recent years, however, concerns have been raised that swim-up methods with centrifugation may contribute to sperm cell damage, by promoting production of reactive oxygen radicals that can inhibit the fertilizing capability of sperm.⁹⁷ Research into improved methods of standard semen preparation is ongoing.

Male Factor Infertility

The definition of male factor infertility is the subject of ongoing debate. A common clinical standard describes male factor as significant when a couple fails to conceive naturally after a given time (also debated) and repeat semen analysis demonstrates one or more of the following: concentration of sperm cells $<20 \times 10^6/\text{ml}$, progressive forward motility <50 percent, or >50 percent abnormal morphological forms. It is important to note that natural pregnancies may occur when the analysis of semen shows poor results, and that infertility may persist when semen parameters are near normal. What is clear is that oligozoospermia (very few sperm cells) is highly associated with infertility, and azoospermia (no sperm cells) is absolutely associated with infertility (true sterility).⁹⁸

The causes of male factor infertility or subfertility are poorly understood. Testicular function is regulated by the hypothalamus and pituitary, as is ovarian function in the female. Gn-RH released by the hypothalamus stimulates pituitary release of FSH and LH, and LH stimulates the testes to produce testosterone. Testosterone and FSH act together to initiate and complete the process of spermatogenesis (production of sperm cells). Primary testicular dysfunction may be caused by disease of the testes, where hormonal levels are normal but spermatogenesis impaired. Such disease may be caused by infection, trauma, serious medical illness, genetic abnormality, radiation, or chemical toxicity from drugs or environmental agents such as pesticides. In some men with varicocele (abnormality of the internal spermatic vein), subfertility may present. Hypothalamic or pituitary disease may also contribute to subfertility in the male. The medical management of male infertility is limited, and may involve surgical repair of varicocele, administration of LH, Gn-RH replacement, or administration of antibiotics.⁹⁹ The pregnancy hormone "relaxin" has also been found in the prostate gland, and has been used to improve sperm motility in a limited number of patients.¹⁰⁰ The results of these interventions are extremely limited in most cases. These poor fertility results have led to increasing interest in the application of assisted conception techniques for the treatment of male infertility.

There are growing data that pregnancy may sometimes be achieved even with very few sperm cells, if the female partner is treated by IVF, GIFT, or ZIFT procedures. IVF also provides a "test" for male factor: when there is complete failure of fertilization of ova *in vitro*, some couples may accept this as final "proof" that donor insemination represents their best hope for a pregnancy.

Differential Gradient Methods

Discontinuous high-density gradients have been used to prepare semen for fertilization *in vitro*, with some success. The methods involve the layering of different concentrations of a high-density gradient in a test tube. An aliquot of the semen sample is then overlaid, and the specimen subjected to brief centrifugation. Early investigation revealed that such gradients separate sperm cells on the basis of morphological characteristics and motility, thus permitting careful harvest of the layer containing the highest number of sperm cells with normal appearance and forward progression. The first such attempts were made using a six-step discontinuous Percoll[®] gradient, for five patients in whom previous IVF attempts had resulted in poor or zero fertilization rates. The preliminary study showed that fertilization improved 27 percent, and clinical pregnancies were finally achieved in three of the five couples.¹⁰¹ Later trials using Nycodenz[®] in a four-step discontinuous gradient indicated that improvements in ongoing pregnancy rates could be achieved.¹⁰² Further investigations into such methods, and approaches such as swim-up without centrifugation, may contribute to improved fertilization and pregnancy rates where assisted conception techniques are used to treat male subfertility. Fertilization of human oocytes and embryo cleavage have been achieved using very small numbers of sperm with culture of ova and sperm in capillary tubes.¹⁰³

Micromanipulation

Where semen quality is extremely poor, with very few sperm cells (and those of abnormal morphology or limited motility), attempts have been made to enhance the chance of fertilization by manipulation of oocytes *in vitro*. The human ovum is not released as a single cell from the ruptured or aspirated follicle; adherent to the ovum are a mass of cells known as the cumulus oophorus, which play a supportive role in oocyte development in the follicle. Although only one sperm cell normally enters the ovum in fertilization, many sperm cells act on the cumulus mass, digesting these cells so that one spermatozoon is able to enter. To do so, this sperm cell must traverse the ovum's zona pellucida, a coating of mucopolysaccharide and trypsin-digestible material.¹⁰⁴ This layer may prove an impenetrable barrier to sperm in very low numbers, or where morphology and motility are poor.

Complete removal of the zona pellucida compromises embryo development *in vitro*,¹⁰⁵ but several methods of zona manipulation have been used to facilitate entry of sperm cells into the ovum. One method involves removal of the cumulus cells by washing the ovum in enzyme (0.1 percent hyaluronidase), then gently passing the ovum back and forth through a narrowed pipette to shear off excess cells. The ovum is then passed through several rinses with culture media. This cumulus-free ovum can then be held using a micromanipulator under microscopic

visualization. A closed-tip puncture needle is then used to cut a hole through the zona. This method, "zona cutting," has been used in conjunction with ZIFT, and a clinical pregnancy has been achieved.¹⁰⁶ Chemical drilling of the zona pellucida has also been attempted. This involves removal of the cumulus followed by localized application of acid Tyrode's solution to create a "drill hole." Fertilizations have been achieved with this approach, but no clinical pregnancy.¹⁰⁷

One variation of these approaches is known as partial zona dissection (PZD). PZD also requires removal of the cumulus oophorus using hyaluronidase and pipetting. Special micromanipulation instruments are then used to hold the ovum, and to create a series of gaps in the zona pellucida. Prepared sperm cells are then added to the culture wells with the ovum.¹⁰⁸ This is a purely mechanical manipulation, but more recently PZD has been used in conjunction with micro-injection of small numbers of sperm cells.

PZD with micro-injection of small numbers of sperm entails the removal of the cumulus oophorus as described. Micromanipulation technique is then used to place a sperm insertion needle across a gap in the zona to permit injection of five to ten sperm cells into the perivitelline (near the "egg yolk") space. Oocytes are then returned to incubation conditions.¹⁰⁹

Indications

Discontinuous gradient approaches and medical management of the male partner may result in pregnancies where the male factor is mild or moderate in severity. Still other approaches may be attempted for special cases of male infertility; for example, electro-ejaculation has been used to collect sperm cells from a quadriplegic man for IVF resulting in a successful pregnancy.¹¹⁰ The literature also reports an attempt at micro-injection of sperm aspirated (needle biopsy) from a male with obstructive azoospermia, but without successful pregnancy.¹¹¹ Micromanipulation of oocytes may be attempted where previous IVF testing has demonstrated fertilization failure. However, the results of both fertilization and pregnancy using such techniques are extremely limited, and the decision to pursue such treatment demands an extensive process of counselling and informed consent. At this time, it is better to consider micromanipulation techniques for male factor infertility as clinical experimentation rather than treatment.

Results

Where male factor infertility is not the main indication for IVF treatment, established IVF programs report a range of results for fertilization of 70 to 85 percent, and clinical pregnancy rates of 10 to 20 percent. Where discontinuous gradients for semen preparation are used in conjunction with IVF, fertilization rates range from 30 to 50 percent, with a <10 percent clinical pregnancy rate. The results that necessitate ovum

micromanipulation are much poorer: no pregnancies have been reported using acid Tyrode's zona drilling, and a clinical pregnancy has been reported with zona cutting. Fertilization rates using micromanipulation may be quite high. Unfortunately, there is a very high incidence of polyspermia and failure of embryo cleavage. Many centres experimenting with these techniques report no pregnancies.¹¹²

Risks

The use of assisted conception technologies for male factor infertility carries a variety of risks, some of which are common to all these approaches. There are no known specific risks to the use of density gradient sperm selection. The materials used are thought to be inert to biological material and apparently normal embryogenesis, and live births have resulted from such conceptions. This application for such materials is entirely novel, however, and risks of long-term sequelae for children thus conceived cannot be known at present.

Micromanipulation of the ovum may cause damage to the cell that prevents embryo development or causes cell death. The most common risk to micromanipulated oocytes is that of polyspermia — fertilization by more than one sperm cell. Disruption of the zona pellucida clearly damages those mechanisms that normally prevent entry of more than one sperm cell.¹¹³

Researchers are currently investigating methods of removing excess pronuclei from polyspermic oocytes.¹¹⁴ Survival and cleavage rates are very low for this procedure.

Concerns have also been raised that micro-injection techniques for very poor sperm may increase the incidence of transmission of abnormal karyotypes.¹¹⁵ Although there are no reports of infants born with abnormal karyotypes as a result of these procedures, this hypothesis may account for the high early abortion rate.

Finally, these techniques may contribute to even greater psychosocial stress for couples. Failure of fertilization at IVF was once the final test for male fertility, with only insemination by donor as a further option if couples so chose. The advent of each new micromanipulation method brings new hope to such couples, but the results are anything but encouraging. These technologies also raise feminist issues: while the medical "problem" lies with the male partner, it is the female partner who undertakes the risks associated with ovarian stimulation, ovum retrieval, and possibility of early abortion or multiple pregnancy. This represents an area where public debate and the interests of infertile couples and their clinicians are very difficult to reconcile.

Part 6. Embryo Cryopreservation

Embryo cryopreservation techniques allow the freezing of mammalian embryos at very cold temperatures, while maintaining the integrity of the embryo for later thawing and replacement into a receptive uterus. Much of this work developed through industrial animal husbandry: embryo collection and freezing form an important aspect of breeding prize line livestock using “inferior” dam hosts for gestation in both cattle and sheep. The application of these techniques to IVF and GIFT treatments has resulted in significantly improved results in a number of international centres. Embryo cryopreservation is a routine component of many assisted conception programs. The rationale for incorporation of embryo freezing into these programs takes into account the potential for using all the oocytes collected on a given ovulation induction cycle, while minimizing the risks associated with transferring large numbers of embryos on any one cycle.

Principles of Embryo Freezing

Cell freezing entails exposure to and equilibration with increasing concentrations of cryoprotectants (solutions that help protect cells from damage during freezing), cooling to temperatures below zero, storage, thawing, and, finally, removal of the cryoprotectant solution. Cryoprotectants are essential to successful freezing and thawing of viable embryos: without them, expanding crystalline ice formation within the cell causes irreversible structural damage to cell membranes, including rupture, or lysis, of the cell membrane. Crystallization may occur either during the freezing process or during the thawing stages. In freezing, embryos are introduced to increasing concentrations of cryoprotectant agents, with equilibration of the concentrations of water and agent allowed to take place at each step. This process essentially dehydrates the cell, replacing the internal aqueous cellular environment with agents that will not promote ice formation. Thus the thawing process must include step-wise rehydration of the cells.¹¹⁶ Various methods are used to cryopreserve human embryos.

The first protocols for cryopreservation of human embryos used slow freezing in cryoprotectant solutions. Dimethylsulphoxide (DMSO) and glycerol cryoprotectants were used, and, from those successfully used, methods were adapted to freeze research animal and livestock embryos. Slow-cooling cryopreservation requires that the freezing solution equilibrate within the cells, permitting only gradual crystal formation. The solution is usually ice nucleated (“seeded” — controlled initiation of crystal formation) by touching the outside of the storage vial or straw with a cooled instrument, around -7°C . Computer-programmed freezing machines are used to reduce the temperature slowly, at a rate of $<1^{\circ}\text{C}$ per minute; once embryos have reached -30° to -40° , they may be rapidly cooled and then stored in liquid nitrogen.¹¹⁷

Concerns that DMSO and glycerol may be toxic to embryos led to a search for other cryoprotectants: glycerol has been shown to be fusagenic in early-cleaved human embryos.¹¹⁸ Propylene glycol (1,2-propanediol, PROH) is now used extensively for early-cleaved embryo and pronuclear oocyte cryopreservation. This entails placing embryos in 1.5 M PROH in phosphate-buffered saline with 20 percent human serum for 15 minutes at room temperature. Embryos are then transferred into a solution of 1.5 M PROH and 0.1 M sucrose, and drawn into straws. These are then sealed and slowly cooled to -7°C , at a rate of 2°C per minute. Storage straws are seeded at -7°C and cooled to -30°C at a rate of 0.2°C per minute, rapidly cooled (-50°C per minute) to -190°C , then transferred to liquid nitrogen storage. Thawing occurs rapidly in a warm bath at 30°C , then the embryos are expelled into a solution of 1.0 M PROH with 0.2 M sucrose for five minutes. PROH is removed by equilibrating the embryo in 0.5 M PROH then 0 M PROH in two five-minute steps. The sucrose is removed in a final step.¹¹⁹ Most IVF programs use PROH or DMSO freezing techniques; DMSO may be used to freeze embryos of all developmental stages.

Slow-cooling methods are costly, requiring sophisticated programmed freezing equipment and considerable operator time. Interest in rapid freezing of embryos led the search for ways of overcoming intracellular ice formation. This may be accomplished by promoting vitrification (glass formation) rather than ice formation of the suspension solution. To do this, very high concentrations of cryoprotectant are required: solute concentrations must exceed 40 percent. These methods involve adding the concentrated solution to embryos (three-minute equilibration with 3.0 and 4.5 M PROH) then plunging the embryos and solution into liquid nitrogen.¹²⁰ High survival rates for early-cleaved embryos have been achieved with this method, but ongoing pregnancy rates are disappointing. Further modification and development of such techniques are required before they may supplant slow-cooling methods.

Indications

Embryo cryopreservation allows the replacement of a limited number of embryos on the treatment cycle, where large numbers of embryos resulted. The benefits are twofold: first, this approach can reduce the incidence of multiple pregnancy and associated neonatal morbidity and mortality. Second, replacement of frozen-thawed embryos on subsequent natural cycles increases opportunities for at least one successful pregnancy to result from a given ovulation induction treatment. This reduces exposure to ovulation induction drugs, which are costly and also may carry significant risks. It has been estimated that embryo freezing may increase the chances of pregnancy by 8 to 12 percent for each ovum retrieval procedure.¹²¹

Embryo freezing has also been used as a "rescue" procedure where oocytes have been retrieved, but the patient was diagnosed with imminent ovarian hyperstimulation syndrome. Freezing of embryos permitted

replacement at a later cycle, after medical management of the hyperstimulation and recovery were complete.¹²² This approach could also be used for other illness or accident contraindicating embryo transfer at the time of the treatment cycle.

Frozen embryos also raise the possibility of later donation to another infertile couple, if circumstances of successful pregnancy, illness, death, or marital breakdown lead to the gamete providers' decision not to pursue pregnancy. This possibility, however, does raise a host of ethical and legal issues surrounding the guardianship and disposition of human embryos.

Frequency of Use

Overall usage and success rates are difficult to derive from the current literature. However, it is known that hundreds of frozen-thawed embryos have resulted in normal deliveries around the world. Frequency of use is determined largely by program availability, patient preferences, and local statutes.¹²³ Certain religious or cultural mores may prohibit embryo cryopreservation for some patients.

Results

High thaw survival rates are now reported by most centres. Over 80 percent of embryos survive PROH cryopreservation, with more than 50 percent of cells intact. Even where two cells have ruptured in a four-cell embryo, this embryo can be transferred and ongoing pregnancy may be established. Embryo quality is an important predictor of freeze-thaw survival: morphologically regular embryos without fragments have the highest survival rates.¹²⁴ Most centres report that pregnancy rates for replacement of frozen embryos on natural cycles are at least comparable with pregnancy rates for fresh embryo replacement on IVF treatment cycles. The endometrium may be more receptive to implantation on "natural" cycles, and at least one group reports a significantly increased ongoing pregnancy rate for replaced frozen embryos.¹²⁵ Only one group has reported significantly poorer pregnancy potential when frozen-thawed embryos are replaced.¹²⁶ There is good evidence that an established embryo cryopreservation program may maximize pregnancy potential from one ovum retrieval procedure.

Specific Risks

The results of freezing on embryo survival have been discussed. Evidence indicates that cleaved embryos demonstrate higher survival rates and pregnancy potential than do frozen fertilized ova (pronuclear oocytes).¹²⁷ Animal research indicates that frozen cleaved embryos can be maintained for many years with little effect on survival rate and pregnancy potential.¹²⁸ Long-term evaluation of children born as a result of frozen-thawed embryo replacement is needed to assess whether any

sequelae occur. The excellent results of embryo freezing for livestock suggest there are few, if any, physical dangers.

Perhaps the most difficult issues around the cryopreservation of human embryos are ethical and legal issues. It would seem prudent that couples and service providers address a number of these concerns before freezing embryos. Such decisions include consideration of the fate of frozen embryos in the event of any of the following: (i) death or disability of one or both prospective parents; (ii) legal separation or divorce of prospective parents; (iii) embryos held in storage beyond the reproductive limit of the prospective mother, or some agreed-upon time limit; (iv) loss of contact with the prospective parents, or delinquency in payment of storage charges; (v) loss of interest by prospective parents in attempting pregnancy; (vi) prospective parents' wish to remove frozen embryos from the holding program; or (vii) discontinuation of a cryopreservation program by a centre for assisted reproduction.¹²⁹ Careful consideration and discussion of these matters may not only prevent complex legal difficulties, but facilitate the informed consent process for embryo freezing.

Part 7. Ovum Cryopreservation

In principle, successful ovum cryopreservation would allow much flexibility in standard infertility treatment programs, while minimizing concerns about multiple pregnancy, "ownership" of gametes as compared with embryos, ovum donation, and certain cultural and religious concerns and objections to the maintenance of embryos for indefinite storage. Successful freezing of mammalian ova remains problematic and controversial, however. The architecture of maternal genetic material along the spindles of the unfertilized egg may be far more unstable than the genetic architecture of either the fertilized egg or the newly divided embryo. There is ongoing research to develop safer methods of ovum freezing but, at this time, the clinical use of ovum freezing is limited and contentious.

Principles of Single-Cell Freezing

The principles of single-cell freezing are identical to those of freezing cleaved embryos. The challenge is to prevent crystalline ice formation that leads to the disruption of cell membranes, and to select cryoprotective agents that are not toxic to the cells. The freezing of human oocytes poses particular difficulties, however. The ovum contains a relatively large mass of cytoplasm (aqueous) that is difficult to freeze without damage. Ova are unique cells, with the potential to undergo fertilization and initiate embryo development. Genetic information is distributed along the mitotic spindle, and disruption of this fragile architecture may result in gross changes that are not apparent by microscopic examination of the cell.¹³⁰

Methods

Slow-cooling DMSO methods have been used to freeze both unfertilized mouse and human oocytes. Although one group has reported very high survival rates for both species, this research has not been confirmed elsewhere.¹³¹ Research has shown that exposure of mouse ova to DMSO reduces the fertilization potential of these cells, and that rapid cooling without cryoprotectant may prevent sperm penetration.¹³² DMSO may also effect profound changes to the microtubules, pericentriolar material, and chromosomes of unfertilized mouse oocytes.¹³³

PROH methods have not ameliorated these problems. PROH frozen-thawed oocytes show a dramatic increase in polyspermy,¹³⁴ and parthenogenetic activation of human oocytes by PROH has been shown.¹³⁵ The literature strongly suggests that much research and development will be needed before unfertilized oocyte cryopreservation is incorporated into assisted conception technologies.

Indications for Ovum Freezing

Although very few attempts have been made to freeze human oocytes for later fertilization and embryo transfer, the overwhelming opinion is that safe methods have not yet been developed, and that human oocyte cryopreservation should be restricted to research rather than used for therapeutic purposes at this time. Should safe and reliable methods be found, there are important applications. Currently, sperm freezing is offered to men undergoing radiation or chemotherapy for malignancy, allowing future opportunities for children. Similarly, a safe method of ovum freezing would make this option available to women of reproductive age who undergo similar procedures. Freezing of excess oocytes collected at ovum retrieval would yield the same benefits as embryo cryopreservation, but without some of the complex ethical and legal issues related to the disposition of embryos. Ovum cryopreservation would also facilitate programs for ovum donation to women without ovaries, with ovarian failure, or who are known carriers of certain genetic diseases.

Frequency of Use

An on-line search of medical data bases to March 1992 revealed only two reports of pregnancy subsequent to the fertilization *in vitro* and replacement of previously frozen oocytes.¹³⁶ The basic research cannot support human oocyte cryopreservation at this time: extensive studies in the mouse have shown severe errors in fertilization, and the development of grossly deformed fetuses from previously frozen oocytes.¹³⁷ Vast improvements in methodology with established safety in animal models are needed before human clinical experimentation can proceed.

Part 8. Frontiers in Assisted Conception

Many frontiers in reproductive research centre around understanding the normal and pathological development of the early embryo in terms of the genetic potential of the embryo, implantation physiology, male factor infertility, and ovulation induction. Still others involve the application of existing technologies in novel, and sometimes controversial, ways. This section discusses experimental techniques that lend insight into the genetic constitution of the fertilized ovum with respect to normal development, detection of abnormalities, diagnosis of inherited disorders, and the selection of embryos on the basis of sex. It further outlines some new directions for "old" technologies. Limitations in both the technologies and the practicality of their application are summarized.

Embryo Biopsy and Genetic Diagnosis

The rationale for embryo biopsy is simply to remove one blastomere (usually from a four- to eight-cell embryo), without causing permanent damage to the remaining cells. This cell may then be "tested," and the biopsied embryo still successfully transferred to a receptive uterus. This is possible since very early embryos contain cells of equal potential development (totipotentiality); thus the careful removal of just one cell does not compromise the normal development of pregnancy.

Methods for embryo biopsy entail partial zona dissection, or drilling of the zona pellucida. The embryo is then washed in calcium-free solution to reduce intercellular adherence. A suction micromanipulator can then be used to gently remove just one cell, and the embryo is transferred back to standard culture conditions.¹³⁸ These embryos may be replaced at embryo transfer on the treatment cycle, or cryopreserved until results of the embryo biopsy analysis are available.

A biopsied blastomere may be analyzed in two ways: first, the single cell may be examined directly using new DNase (deoxyribonuclease) probes. Polymerase chain reaction permits amplification of the DNase in one cell so that this DNase is rapidly replicated, to be read directly or by DNase probes. In this way, rapid detection of genes or gene markers associated with severe genetic diseases can occur.¹³⁹ Alternatively, the biopsied cell may be cultured *in vitro*, if greater quantities of cellular DNA are required for a specific genetic diagnostic test.¹⁴⁰

Currently, the application of preimplantation genetic diagnosis is limited to those couples at risk for the transmission of one of >200 recessive diseases (including X-linked mental retardation, Lesch-Nyhan syndrome, and Duchenne muscular dystrophy). For many such diseases, prenatal diagnosis is available using amniocentesis or chorionic villus sampling, with possible abortion of an affected fetus. However, preimplantation diagnosis permits identification and selection of only unaffected fetuses for transfer. Advances in DNase analysis will

undoubtedly allow precise identification of the abnormal gene (or marker), so that selection of embryos for transfer can be based on presence of disease. Currently for X-linked diseases where no gene marker has been identified, an option available is to transfer only female embryos after the sex has been identified, by determining if there is an XX or XY chromosomal constitution.¹⁴¹

Improvements in identification of genetic disease requiring only very small samples of material would allow, at least theoretically, the preimplantation diagnosis of hundreds of diseases. The gene for cystic fibrosis, the most common genetic disorder affecting Caucasians, was identified in 1989.¹⁴² Preimplantation diagnosis would permit known carriers to transfer only those embryos shown to be free of the disease. Since these techniques require couples to undergo assisted reproduction, their application in the near future is likely to be extremely limited. Non-surgical uterine lavage can be used to harvest embryos from a newly pregnant woman — within 14 days of fertilization — and this technology has been used in the United States to obtain human embryos for preimplantation diagnosis.¹⁴³ Guidelines developed by the Society of Obstetricians and Gynaecologists of Canada discourage the use of uterine lavage to harvest ova and embryos for donation, because of risks to women undergoing the procedure:¹⁴⁴ they have not yet published an opinion on the use of uterine lavage for preimplantation diagnosis.

Gene Therapy

The rigorous definition of gene therapy refers to the transfer of a normal allele into an individual who carries a mutant allele and is affected by a genetic disease. A broader definition would include manipulation of the genetic constitution of either gametes (germline therapy) or early embryos so that “corrected” embryos could be replaced in the uterus with normal pregnancies and offspring resulting. Correction of a detected gene defect represents the ultimate application of preimplantation genetic diagnosis. One advantage in attempting gene therapy with the preimplantation embryo lies in the very small number of cells to be manipulated, and in the totipotent property of early blastomeres.

To date, such work is limited to animal experimentation using early embryos. The principles include embryo biopsy and analysis as described, and a variety of technologies to directly insert genes into the germline. Gene micro-injection has been attempted in a one-cell-mouse-embryo model, and retrovirus-mediated gene transfer has been tried in cleaving-mouse embryos. Genes may also be introduced into the germline by first placing them into cultured embryonic stem cells. Transformed cells are identified and can be introduced into the blastocyst cavity. The applicability of these techniques depends on embryo survival, efficiency of gene uptake, and evidence of gene expression.¹⁴⁵ These investigations remain highly experimental, and in people the option to place into the

uterus only those embryos diagnosed as normal is much simpler.¹⁴⁶ However, at least two possible scenarios where germline therapy might be requested have been described. The first involves couples who may express a moral preference for "repairing," rather than discarding, an embryo. The second involves couples who are both homozygous for the same genetic disease, so that all their offspring would be affected. If both wished to be the genetic parents of the child, early embryo gene therapy might provide a means for having their own genetic child, yet also sparing that child from the disease.¹⁴⁷ This scenario could apply only to those recessive disorders that are mild enough to allow those affected to become adults and to function such that they want to have children. Some argue that performing experiments to change the genetic constitution of such embryos cannot be justified. Concerns have been expressed that such procedures be attempted only in cases in which there is reasonable scientific evidence of positive outcome *and* extensive counselling for informed and voluntary consent.¹⁴⁸

Sex Selection

The sex of one's offspring has important cultural and historical meaning. A variety of medical and non-medical approaches that attempt to improve the chances of conceiving one or the other sex have been recorded. Prenatal diagnosis by chorionic villus sampling or amniocentesis is used to determine the sex of a fetus for those couples at risk of having a child with an X-linked genetic disorder, where only males are affected. Abortion of male fetuses is an option in this situation. Selection of sperm on the basis of sex has been attempted using density or motility separation, electrophoresis, cell sorting, and immunological techniques.¹⁴⁹

Recently, IVF and preimplantation determination of sex have been performed, using Y-chromosome DNA amplification of biopsied embryonic cells.¹⁵⁰ The study involved five couples at risk for transmission of X-linked disorders (X-linked retardation, Lesch-Nyhan syndrome, and Duchenne muscular dystrophy). The couples underwent superovulation, IVF, embryo biopsy, and embryo transfer. All had previously terminated pregnancies when affected fetuses were detected by prenatal diagnosis. Biopsy was performed by zona drilling and removal of two cells. Sexing results were available within six to eight hours, so that selected embryos were transferred the same day. Within a six-month period pregnancies had been established in three of the five women, and normal female fetuses were confirmed between 20 and 22 weeks' gestation. Thus sex selection of preimplantation embryos may be successfully used by couples at risk of transmitting sex-linked inheritable diseases, and may be more acceptable for some couples than prenatal diagnosis with abortion of affected fetuses.

Pregnancies are sometimes terminated on the basis of fetal sex, even when the fetus is apparently normal and healthy. Parental preferences for offspring's sex may be strongly influenced by cultural values, with abortion

of healthy female fetuses considered acceptable. However, the cost, risks, and complexity of preimplantation diagnosis of embryo sex are likely to discourage any widespread use of these technologies for selection of fetal sex simply on the basis of preference, particularly where elective abortion is reasonably accessible.

“Old” Technologies, “New” Applications

IVF technologies, including ovum retrieval and embryo cryopreservation, have opened new avenues for the disposition of gametes and embryos. Currently, ovum and embryo donation programs are in place in a number of centres around the world. Recipients are those with documented ovarian failure, surgically ablated ovaries, or gonadal dysgenesis (due to chromosomal anomalies), or those who are without ovaries or are menopausal.¹⁵¹ Donors are frequently women undergoing superovulation for infertility treatment with ovum retrieval. Excess ova may be designated for donation to a synchronized recipient, usually in cases where the donor does not wish the creation of more embryos than she can safely receive at embryo transfer. In other cases, the donor may have cryopreserved embryos in reserve for transfer at a later cycle, but successful intervening pregnancies satisfy the number of children desired. Thus “excess” frozen embryos may become available for donation. Fertile women may also volunteer or be recruited to undergo superovulation for the sole purpose of oocyte donation. Pregnancy rates comparable with “routine” IVF are regularly reported.¹⁵²

Such programs offer a chance for pregnancy for certain women who would otherwise never become pregnant, yet these practices raise many complex legal and ethical issues. Non-anonymous donation raises the possibility of future conflict between genetic and gestational mothers, with the possibility of serious negative effects on both the child and the family. Remuneration for ovum donation is also controversial: the American Fertility Society continues to express grave concern over this practice.¹⁵³ The demand for eggs has led to canvassing of women undergoing sterilization procedures, although results indicate very few of these women wish to donate oocytes, despite offers of money and “enthusiastic counselling.”¹⁵⁴

A number of other permutations using existing reproductive technologies have been proposed. These include embryo freezing for fertile couples, where a woman requires medical intervention such as radiation or chemotherapy; embryo freezing for women in their early twenties, who may wish to defer childbearing until their careers are firmly established; surrogacy (with couple’s gametes) where serious illness precludes a woman’s safe pregnancy, or surrogacy (with couple’s gametes) where a woman does not wish to interrupt her career with pregnancy.¹⁵⁵

The arguments required to support or reject these applications are complex, and must speak to issues of personal liberty, embryos as

property, society's understanding of the family, and moral concerns about how humans reproduce.¹⁵⁶

Part 9. Assisted Reproductive Technologies and Risks

A wide variety of known risks or negative effects are associated with different aspects of assisted reproductive technologies (ARTs), and still others have been hypothesized but are unproven. These risks may be physical, psychosocial, economic, legal, or ethical, and have been identified in the relevant preceding sections. Such risks are viewed differently by the various "players" involved in the assisted conception process — women and men seeking treatment, care providers, and children born as a result of these technologies. In turn, the microcosm of immediate players must engage a dialectic process with various players in a wider social context. The purpose of this section is to summarize known and potential risks, so that these may be evaluated in the context of the benefits that may accrue from the assisted conception technologies.

Drug Risks to Women

Numerous mild to moderate side-effects have been described regarding the use of clomiphene citrate, human urinary gonadotropins, and Gn-RH analogues.¹⁵⁷ These complaints are usually of short duration (confined to the course of treatment), and include nausea, headache, visual disturbances, dizziness, fatigue, nervousness, breast and abdominal pain, and pain or irritation at the site of drug injection. Clomiphene may cause multiple pregnancy, and may be associated with ectopic, heterotopic, and molar pregnancies. Anti-estrogenic drugs have been suggested as a possible risk factor for ovarian cancer.

Unpleasant side-effects are associated with the use of human gonadotropins, but the most serious complication from this therapy is the risk of severe ovarian hyperstimulation syndrome. Multiple pregnancies occur in some 20 percent of these pregnancies; maternal and neonatal morbidity and neonatal mortality associated with multiple pregnancy are substantial. Gn-RH analogues may also occasion unpleasant side-effects, and concerns have been raised that induced prolonged estrogen deficiency may contribute to osteoporosis.

Other Risks to Women

Risks are associated with each intervention performed in assisted reproductive technologies. In addition to drug effects, ovum retrieval (whether by laparoscopy or ultrasound approach) may result in bleeding, infection, and, often, pain. When used, general anaesthesia represents

another risk. Early pregnancy wastage (spontaneous abortion) in IVF patients has both physical and psychological costs.¹⁵⁸

Where multiple gestations are initiated as a result of assisted conception technologies, some centres now offer "selective reduction" of pregnancy (ultrasound-guided destruction of selected gestational sacs) to avoid the serious risks associated with multiple births.¹⁵⁹ While such interventions are generally successful in limiting the number of gestational sacs, the decision to undergo such a procedure may be extremely painful for some patients, and difficult to reconcile with the years of effort to achieve pregnancy.

There are few successful treatments to the male for male factor infertility, and assisted conception technology tests and interventions focus almost exclusively on the female body, even if infertility results from a male factor. Significant numbers of women report experiences of depression, futility, and loss of control. The nature of the existing technologies is such that female partners carry a substantially greater load of burdens and risks.¹⁶⁰ Research indicates that, when treatments fail, women experience greater depression and anxiety than do their partners.¹⁶¹

Risks to Children Conceived with ARTs

Known risks to children conceived through assisted reproduction include those associated with multiple pregnancy.¹⁶² Premature delivery (<37 weeks gestational age) occurs in approximately 24 percent of ART pregnancies, and birthweights are predictably lower. Some 30 percent of infants born as a result of assisted conception pregnancies are less than 2 500 g, and this is a direct consequence of multiplicity and premature birth. Infant mortality rates may be twice as high as national averages, again as a result of the high prevalence of multiple births. Mean apgar scores decline with increasing multiplicity, and the percentage of infants with jaundice and those who require neonatal intensive care increases.

Overall, the congenital malformation rates observed in such children are thought to be similar to those in the general population, although long-term registry follow-up is required to verify this.¹⁶³ Some questions have recently been raised with regard to neural tube defects, and concerns have been raised that assisted conception entailing gonadotropin stimulation may increase risk of hypospadias in male infants.¹⁶⁴ Psychosocial and intellectual development in these children from ARTs have been studied, and appear at least normal. High scores on psychometric development scales have been attributed to exceptional parental motivation ("wantedness") and their generally high socioeconomic status.¹⁶⁵ Long-term sequelae as a result of assisted conception interventions or drugs are not known, and data on this should be collected.

Psychosocial development of ART children appears well within normal range; future difficulties may arise for these persons in relation to

understanding their conception, particularly where donor gametes or donor embryos are involved. These difficulties may be analogous to those experienced by adopted children, and there may be a demand for uniform policies that both protect donors and permit children to discover details of their genetic history.¹⁶⁶

Risks to Gametes/Embryos

The great development potential of gametes and embryos carries an exquisite sensitivity to environmental agents, whether these are culture media and laboratory ware, superovulation drugs, culture conditions, cryopreservation agents and processes, or micromanipulations. Development and congenital malformation rates among children born as a result of ARTs are generally reassuring, although important areas for long-term follow-up have been identified. The early pregnancy wastage in ART conceptions may indicate the influence of one or more of these factors. Only limited basic research has been performed in this area, in part because of the relative scarcity of gametes and embryos. Premature chromosome condensation has been observed in oocytes fertilized *in vitro*; in 320 inseminated ova where neither pronuclei formation nor cleavage occurred, permanent arrest of the oocytes occurred at metaphase II after sperm penetration. This was thought to arise from chromosomal asynchrony, which may reflect ovum immaturity.¹⁶⁷

Yet another study investigated the incidence of chromosomal anomalies in human preimplantation embryos after IVF. Results indicate a high incidence (40 percent) of anomalies, with a high rate of trisomic mosaicism. Whether such anomalies arise during gametogenesis, fertilization, or cleavage is not known, nor is there a "gold standard" *in vivo* by which such results can be compared. Such data are consistent with high early pregnancy wastage in ART conception, and illustrate the need for further investigation.¹⁶⁸

Risks to Couples

The experience of infertility can place substantial burdens on couples. Feelings of inadequacy, guilt, depression, futility, and loss of control are common. These problems have long been recognized, as has the need for available ongoing counselling and support for couples undergoing infertility treatment. Further, infertility often necessitates explaining childlessness and treatment demands to the "outside" world: friends, relatives, employers, and insurance companies.¹⁶⁹ Traditional psychiatric concepts of depression and alienation may be inadequate and inaccurate in describing the experiences of couples undergoing infertility therapy, and it has been suggested that new vehicles be constructed to diagnose and implement stress therapy for this population. The purpose of such vehicles would be to provide appropriate intervention while avoiding stigmatizing psychiatric labels.¹⁷⁰ However labelled, the cumulative physical, emotional,

and economic stresses inherent in ART treatment can contribute to relationship and marital breakdown, employment difficulties, and compromised interpersonal relationships.

Gender-specific diagnosis of the cause of infertility may lead to different types and degrees of emotional response. One study has shown that women tend to react in much the same way to diagnosis of infertility, regardless of the gender-specificity of the diagnosis. By contrast, men tend to experience a significantly deeper negative emotional response, in terms of depression, feelings of inadequacy, and low self-esteem, when a male-specific diagnosis is made.¹⁷¹ Different gender experiences of infertility may contribute to feelings of alienation and relationship breakdown.

Stress associated with infertility therapy may actually contribute to poor outcome of therapy. While the nature of psychogenic subfertility is poorly understood, recent research into psycho-endocrinological stress responses suggests these may affect outcome of interventions such as IVF.¹⁷² Much basic research will be required to explain the mechanisms and roles of these phenomena, and to suggest interventions for improving such situations.

Risks to Health Care Providers

As with many areas of "high-technology" medical practice, ART stresses are not limited to patients and families, but may affect health care providers as well. In many centres, services are offered seven days a week to a large volume of patients. Each step of assisted conception technologies is essential to the possibility of a positive outcome for treatment. Thus there is little or no margin for staff error, be it physician selection of superovulation regimen, nurse administration of gonadotropins, or handling of gametes and embryos by laboratory staff. In addition, infertile patients experience and share much grief with their caregivers, and the relatively low success rates compound this experience for service providers.

The new reproductive technologies also raise many difficult ethical and social questions for caregivers, and dissent among team members can arise when different members hold different values. One case report cites the difficulties encountered by an infertility team when a couple seeking infertility treatment both proved to be HIV-positive. Despite being told that the vertical transmission rate is thought to be 30 percent in asymptomatic mothers, the couple remained adamant in their wish for aggressive treatment. The team finally decided they would provide diagnostic tests, but no active management because of the ethical uncertainty.¹⁷³ Recognizing and respecting different values held by patients can also be extremely difficult, and there is evidence that providing treatment to patients with alien cultural values can be a serious problem for both caregivers and patients.¹⁷⁴

One study has shown that patients and different caregivers perceive patient physical and emotional stress differently: nurses tended to rate

patient distress higher than did physicians, and older nurses and physicians rate patient distress lower than their younger colleagues.¹⁷⁵ These results may suggest not only differences between physicians' and nurses' perceptions of patient distress, but also that both groups may be subject to diminished sensitivity over time.

A final problem for caregivers and patients is when and how to approach decisions to discontinue treatment. Service providers may continue to offer hope, especially when confronted by the distress of patients over failed treatment, and patients may cling to any possibility for yet another intervention.¹⁷⁶ There are no rules for either caregivers or patients to decide when further treatment is futile, and this represents a grave challenge to both.

For a summary of treatment indications, results, and risks, see Table 1.

Conclusion

Advances in assisted reproduction have resulted in thousands of successful pregnancies around the world, and may offer hope for otherwise childless couples. However, the new reproductive technologies raise a host of personal, social, ethical, and legal issues, and the list of new treatment modalities, along with "new" applications of "old" technologies, is growing.

Where possible, not only technical but personal and cultural challenges have been noted. The complexities in understanding the impact of ARTs lie not only in technical considerations, but appreciation of the values and interests of the various "players" involved. Neither the "immediate" players (patients, caregivers, and children) nor those in the wider social context can be viewed as homogeneous with respect to goals, values, and interests. Shortly after the first draft of this paper had been prepared, I was fortunate to address a patient seminar and spoke of informed consent issues in assisted reproduction. A number of those attending protested my repeated reference to ARTs as "elective" treatments. In their view, the pursuit of a family (consisting of their own children) represents as important a life goal as finding a partner, having a home, friends, career, liberty, and health — that there is nothing "elective" about these treatments. For some, the pursuit of a life with their own children may be perceived as a necessity, rather than as a wish or aspiration. It is hoped that as a factual summary, this paper will help ground discussion of the difficult issues surrounding these technologies, and shed some light on their known and possible risks.

Table 1. Summary of Treatment Indications, Results, and Known Risks

	Indications	Results range	Risks
Ovulation induction	anovulation, superovulation (for IVF, etc.)	induces ovulation/ superovulation >90% cases	immediate effects, hyperstimulation, multiple pregnancy
Laparoscopy	diagnostic gamete transfer ovum retrieval (obsolete)	- excellent - 0 to 25% pregnancy rate	general anaesthesia, fallopian trauma, post-op morbidity, pain
Ultrasound ovum retrieval	IVF, GIFT, ZIFT, DOST	ova collected >90% cases	missed ovulation bleeding, infection haemorrhage
<i>In vitro</i> fertilization	tubal disease endometriosis cervical factor unexplained infertility male factor	- 0 to 25% pregnancy rate - <10%	hyperstimulation multiple pregnancy ectopic pregnancy psychosocial
Micromanipulation of gametes	severe male factor	<<5%	oocyte death fertilization errors (polyspermia) early abortion false hope
Cryopreservation	surplus embryos, transfer not possible (illness, accident), embryo donation	>70% survival, preg ~IVF rate, may increase ongoing rate	embryo death, embryo disposition, legal/ethical
Ovum	experimental only	unknown, poor	disruption genetic material, teratogenic
Embryo biopsy	diagnosis of genetic disease (carrier parents) sexing of embryo	unknown, normal pregnancies, infants have occurred	embryo damage, social/ethical issues

Glossary of Terms

Amenorrhoea: absence of menstruation; primary amenorrhoea, failure to menstruate from puberty.

Anovulatory: failure to ovulate during the reproductive cycle.

Atretic: spontaneous and gradual disappearance by degeneration.

Azoospermia: complete absence of spermatozoa (sperm cells) in the semen.

Clomid®: proprietary name for clomiphene citrate, an anti-estrogenic compound.

Cryopreservation: freezing of viable cells for later thaw and restoration to function.

Culture media: sterile solutions of nutrients necessary for the healthy maintenance and growth of cells *in vitro*.

DOST: direct ovum and sperm transfer; the transfer of retrieved oocytes and washed sperm directly to the uterus for the initiation of pregnancy.

Endometriosis: a disease state where abnormal loci of endometrial tissue are found in the fallopian tubes, in the pelvis, or on the ovaries. It may cause or contribute to infertility.

Endometrium: the lining of the uterus that proliferates during the menstrual cycle, and is shed at menstruation.

Epididymis: a cordlike structure along the border of the testes: spermatozoa are stored in the ducts of the epididymis.

Estrogen: those hormones capable of stimulating estrus in rodents; released by developing ovarian follicles.

Estrus: Those intervals in the sexually mature female animal when the female is receptive to the male.

Fallopian tube: the delicate fimbriated tube that sweeps the ovum released at ovulation and propels it gently into the uterus. A common site for ectopic pregnancy.

FSH: follicle-stimulating hormone; released from the pituitary, FSH is directly responsible for the growth and development of ovarian follicles in the female, and stimulates spermatogenesis in the male.

Fusagenic: an agent promoting fusion of cell membranes; in the early embryo this leads to compromise, then failure, of the division process.

GIFT: gamete intrafallopian transfer; direct transfer of ova and washed sperm into the fallopian tubes during laparoscopy.

Gn-RH: Gonadotropin-releasing hormone; modulates release of pituitary FSH and LH.

Gn-RH analogue: a synthetic Gn-RH, the analogue may be used in brief pulses to act as natural Gn-RH; in rapid pulses or continuous infusion it inhibits natural release of FSH and LH.

Hypospadias: a congenital anomaly in which the male urethra opens on the underside of the penis or on the perineum.

Infertile: inability to conceive naturally after a specified period of trying.

IVF: *in vitro* fertilization, literally "fertilization in glass"; initiation of conception in the laboratory under culture conditions.

Laparoscopy: a specialized surgical procedure allowing visualization and manipulation of the pelvic organs. Performed under general anaesthetic.

LH: luteinizing hormone; the hormone that signals the onset of ovulation, and that promotes development of the corpus luteum. The corpus luteum produces progesterone to support gestation during the first trimester of pregnancy until the placenta is fully established.

- Luteal phase:** the latter part of the menstrual cycle as the corpus luteum develops.
- Luteal phase defect:** inadequate development of the corpus luteum, with inadequate progesterone synthesis to support pregnancy.
- Oligomenorrhoea:** scanty and often infrequent menstruation.
- Oligozoospermia:** abnormally low sperm cell production.
- Oocyte:** the female human germ cell, released at ovulation.
- Ovarian failure:** cessation of reproductive cycling with development and release of oocytes.
- Ovary:** the female gonad, where ova are formed and undergo development.
- Ovulation:** rupture of a mature ovarian follicle and release of an oocyte.
- Ovum:** the female germ cell; see oocyte.
- Pergonal®:** a proprietary name for human urinary gonadotropin; contains a 1:1 ratio of biologically active FSH and LH.
- Perinatal morbidity:** illness in the perinatal period.
- Perinatal mortality:** death in the perinatal period.
- Pituitary:** the “master” gland of the body; essential to normal endocrine function.
- Polyspermia:** abnormal fertilization of an oocyte by more than one sperm cell.
- Profasi®:** proprietary name for hCG; used to induce ovulation.
- Progesterone:** the hormone that prepares the endometrium to receive a newly fertilized ovum; essential to the maintenance of pregnancy.
- Progestosterone support:** administration of synthetic progesterone during the luteal phase to support early pregnancy.
- Pronuclei:** the separate nuclei of the sperm and ovum, before these unite to form the single definitive nucleus of the fertilized ovum.
- PROST:** Pronuclear oocyte salpingo transfer; transfer of pronuclear oocytes to the fallopian tubes at laparoscopy.
- Salpingo-:** pertaining to the fallopian tube.
- Spermatogenesis:** the process of the development of sperm cells.
- Subfertile:** conceiving less often than expected by norms observed in the fertile population.
- Teratogenicity:** that quality of an agent — chemical, biological, or physical — that contributes to or causes malformation of a developing organism.
- ZIFT:** zygote intrafallopian transfer; the transfer of zygotes (fertilized ova) to the fallopian tube at laparoscopy.
- Zona pellucida:** the transparent membrane forming the cell wall in mammalian ova.
- Zygote:** the organism resulting from the union of the human germ cells, with its new and distinct genetic constitution.

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A Socio-Historical Examination of the Development of *In Vitro* Fertilization and Related Assisted Reproductive Techniques

Anne Rochon Ford



Executive Summary

In this paper the author traces the history of *in vitro* fertilization and other assisted reproductive technologies, describes the historical development of reproductive care, and examines the reactions of ethicists and feminists to these developments. She outlines the history of the study of embryo transfer using livestock from its origins in the work of Walter Heape on rabbits in 1891. Progress was slow because of poor understanding of the appropriate experimental culture medium and a lack of understanding of the stages of the fertilization process. In fact, successful transplantation in livestock did not occur until 1964.

By the 1920s new reproductive technologies began to be considered in terms of their transferability to human beings. The first human egg was fertilized *in vitro* in 1944. Until the 1970s, however, research into human *in vitro* fertilization occurred sporadically. As more animal observations were made, interest in the possibility of using *in vitro* fertilization to help women with blocked, scarred, or missing fallopian tubes increased. In the late 1960s and early 1970s, some successes in human *in vitro* fertilization were achieved, aided by the newly developed technique of laparoscopy. In 1978 the first *in vitro* fertilization baby was born, and in 1984 the first frozen-embryo baby was born at the Monash

hospital in Australia. Already at that time there was controversy surrounding the social implications of *in vitro* fertilization, as there was over ovulation-inducing drugs, whose side-effects are potentially dangerous.

The first Canadian *in vitro* fertilization babies were born in Ontario in 1982. Over the following years, at least a dozen clinics were opened in Canada, and in 1985 the Ontario government began to fund the procedure. (This funding is now under close review.)

The author briefly outlines the historical context of childbirth technology. She describes the transition in reproductive care from midwives to physicians, the gains from which tended to be noted by medical historians, while feminist historians noted the losses. Technological evidence from machines, she suggests, was seen to be superior to the subjective evidence supplied by patients. She traces the theme of technology correcting the faultiness of women's nature as far back as Aristotle. This theme enhanced the status of physicians in reproductive care, and faith in technology contributed to an increase in the amount of research on women in assisted human reproduction, despite opposition by feminists, ethicists, and religious bodies.

Describing the reactions to *in vitro* fertilization and other assisted reproductive techniques, the author differentiates among non-feminist, anti-feminist, and feminist perspectives toward the relationship between women and reproduction, the former tending to avoid, overlook, or minimize that relationship, and the latter highlighting it. She also discusses the characterization by some *in vitro* fertilization practitioners of these ethical concerns as "nuisances" to be overcome. Many feminists view the new reproductive technologies critically, some focussing on the link between *in vitro* fertilization and genetic engineering, others saying that "infertility is a social problem that has become medicalized," and still others believing that the resources spent on these technologies would be better spent on infertility prevention. There is also, the author points out, a body of feminist literature that supports assisted reproductive technologies because they represent reproductive choice for women.

Modern technology advanced in such tiny increments for so long that we never realized how much our world was being altered or the ultimate direction of the process. But now the speed of change is accelerating logarithmically. It is apparent that developing a language and a set of standards by which to assess technological impact, and to block it where necessary, is a critical survival skill of our times.

Jerry Mander, *In the Absence of the Sacred:
The Failure of Technology and the
Survival of the Indian Nations* (1991)

Introduction

It is difficult to imagine a twentieth-century medical practice that has engendered more ethical, medical, legal, and political debate than that of *in vitro* fertilization (IVF) and associated techniques. One British *in vitro* fertilization practitioner has noted, "perhaps not since Darwin have we seen such deep-rooted concern the world over, perhaps more so ..." ¹

Nineteenth-century philosopher Auguste Comte observed that to understand science it is necessary to know its history. In the case of a medical practice as controversial as *in vitro* fertilization, it is necessary to know both its scientific and technical history and the history of reactions to it. This involves an exploration of the evolution of medical, ethical, and feminist debates.

This paper examines the development of *in vitro* fertilization and related assisted reproductive techniques (ARTs) in use through the mid-1980s. More recent developments in the *in vitro* fertilization and assisted reproductive technique fields will be discussed in another paper written for the Commission. Techniques discussed exclude donor insemination and surrogacy, which are covered elsewhere.

Through text and a chronological chart, key events in livestock, laboratory, and human research that led to the development of *in vitro* fertilization and assisted reproductive techniques are outlined. This information is then discussed in the context of ethical concerns and implications for women.

Selected medical and scientific terms used throughout the document can be found in a glossary at the conclusion of the text.

Early History: Livestock and Laboratory Experimentation

Considered from a public policy perspective, the history of *in vitro* fertilization and related techniques may be divided into three periods:

1. *Exploration*, which peaked from 1969 to 1978. From this era came "basic IVF," with fertilization of a woman's fresh ova with her husband's fresh sperm for immediate transfer to the wife's uterus.
2. *Consolidation*, from 1978 to the mid-1980s, when "IVF [became] integrated into medical practice so that many physicians talk about it as a first resort, not a last resort for tubal infertility."²
3. *Expansion*, beginning around 1984 with the birth of an infant frozen as an embryo. This period brings with it the rapid development of freezing and storage of human sperm and embryos; donation of these tissues to other couples; the introduction of third and fourth parties as tissue donors; and the study of human embryos for human diagnosis.³

Most literature on the historical development of *in vitro* fertilization and associated techniques is from the past 20 years; however, earlier experimentation on livestock and laboratory animals and in humans was a critical part of the process. Since scientific work was less rigorously recorded than it is today, the record of stages of the developmental process is not as well documented. The chronology provided in this document summarizes key events, some more directly related to *in vitro* fertilization than others.

For centuries, knowledge of the reproductive process, and indeed much of the practice of medicine and surgery, was influenced by the teachings of Aristotle. In his essay, "On the Generation of Animals," Aristotle wrote that in reproduction, the female provides "the physical part" (the body) while the male provides "the essence" or "that which fashions the material into shape" (the soul).⁴ Aristotle further claimed that "... the female is as it were a deformed male; and the menstrual discharge is semen, though in an impure condition; i.e. it lacks one constituent, and one only, the principle of Soul."⁵

Although the scientific accuracy of his teachings has been refuted, his belief in the inferiority not only of women's contribution to reproduction, but of women as a species itself, influenced the thinking of centuries of scientific research. His teachings were further used as rationalization for maintaining women in traditional sex roles. For example, in mid-nineteenth-century North America, physicians believed that the human body contained a limited amount of "vital force" and that young adolescent girls must conserve their vital force for later childbearing. It was rationalized that to engage in intellectual activities such as pursuing an education would be "diverting those energies from the achievement of true womanhood." It was felt that "the brain and ovary could not develop at the same time," and that when one was sacrificed for the other, the consequence would be that the woman would later bear "only sickly and neurotic children."⁶ The belief in women's inferiority based on their biology

is one that should be considered as a backdrop to any discussion of the historical development of assisted reproductive technology.

Alexandrian physician Herophilus discovered the fallopian tubes, named for Gabriele Fallopio in the seventeenth century. The discovery of other internal organs was aided by the seventeenth-century development of the microscope by Anton van Leeuwenhoek. Most significant to the eventual observation of the human fertilization process was the new ability to view sperm under the microscope. For centuries, scientists debated whether the embryo is preformed and simply unfolds and grows during development or whether it "progressively differentiates from a formless being into a complex, complete individual."⁷ In the mid-seventeenth century, William Harvey published his observation that the egg was a formless mass from which the embryo developed. In 1797, William C. Cruikshank succeeded in recovering embryos from a rabbit's fallopian tubes.

By the mid-nineteenth century, embryonic cell development was of interest to European physicians and scientists. The need for spermatozoa to penetrate the egg's zona pellucida for fertilization was demonstrated during this period. Physiologist Simon Fishel notes that despite this discovery, many still believed that sperm merely triggered the egg's development.⁸ By the late nineteenth century, Oskar Hertwig and Hermann Fol demonstrated the presence of male and female pronuclei in the cytoplasm of a fertilized egg. This demonstration made a significant contribution to the understanding of chromosomes.

Thus, current practices of experimenting with fertilization outside the body and of manipulating embryos date back more than a century. In 1891, then-Cambridge University student Walter Heape conducted an experiment that would have considerable impact on the field of embryology.

Known as "the patron saint of embryo transfer,"⁹ Heape retrieved two embryos with a needle after flushing the oviducts following the mating of Angora rabbits. He transferred the embryos to the oviduct of a Belgian hare, who subsequently produced six offspring, two of which were Angoras.

Clearly, the modern procedure of embryo transfer from donor to recipient had its origins in Heape's work. His research led to a greater interest in laboratory production of embryos, but progress was slow, primarily because of poor understanding of the appropriate experimental culture medium and a lack of understanding of the stages of the fertilization process. Various culture media were experimented with over the next several decades, including a warm saline solution, various human and animal tissues, and blood from the placental cord. Ultimately, the development of an appropriate culture medium was the final step toward successful human *in vitro* fertilization.

Over the next several decades, subsequent research involved attempts to extract ova (from ovarian follicles, oviducts, and uteri) and expose them to sperm to achieve fertilization. These experiments were performed primarily on mice, rats, rabbits, and guinea pigs, although simultaneous

livestock industry work would contribute to a greater understanding of the field. Livestock research began in earnest in the 1930s, with sheep and goats.¹⁰ Despite Heape's much earlier experimentation with rabbits, successful transplantation in livestock (from a slaughtered cow's reproductive tract to a recipient female) did not occur until 1964. By 1973, about 20 transplant pregnancies had been established. From that time, the technology and practice accelerated at an astonishing rate. Within three years, there were 20 transplant units in North America, and it was estimated that up to 10 000 pregnancies resulted from cattle embryo transfer in 1978 alone.¹¹

British social policy analyst Hilary Rose notes that by the 1920s, interest in new reproductive technologies (NRTs), such as embryo transfer and *in vitro* fertilization, "began to be considered in terms of [their] transferability to human beings" [from animals].¹² In 1934, U.S. researcher Gregory Pincus and his colleagues fertilized rabbit eggs, learning that when oocytes (eggs) were removed from their follicles and cultured *in vitro* they underwent a particular maturation process. They soon attempted to do the same with human oocytes. Buoyed by Pincus's findings and having worked with him in the 1930s, Harvard gynaecologist John Rock undertook similar work in the 1940s.

Known better for his pioneering developmental work on the birth control pill, Rock also made a significant contribution to the understanding of the human egg and fertilization. With pathologist Arthur Hertig, Rock studied the uteri of women undergoing hysterectomies. The women, who were having hysterectomies for medical reasons, had been asked to keep a temperature chart of their menstrual cycles and were encouraged to have intercourse around their fertile times. When Rock performed the hysterectomy, the uteri were dissected, and, when conception had occurred, eggs were revealed.

It is noteworthy that Rock was a practising Catholic and most of the participants involved in the study also were Catholic. Rock and Hertig expressed the view that their work did not constitute performing abortions since the women were having their uteri removed anyway. Using this procedure, Rock and Hertig observed the first human fertilized egg — in this case, a 12-day-old conceptus — in 1938. This fertilized egg and also other eggs were photographed. These photographs illustrate nearly all medical textbooks on embryology.¹³ This work by Hertig and Rock was considered "one of the pinnacles of research among embryologists."¹⁴

In a field dominated by male scientists and physicians, it is noteworthy that a woman first viewed a human egg fertilized *in vitro*. Biologist Miriam Menkin had been unable to complete her Ph.D. as a result of putting her husband through medical school. She had worked as an assistant to Pincus and subsequently was hired by Rock. At that time, Rock and Hertig already had observed the fertilized eggs *in utero*, but Rock had become increasingly interested in carrying out fertilization *in vitro*. Menkin had to seek consent from women undergoing hysterectomies (with

full or partial removal of ovaries) to work with the ovaries after surgery, as well as to encourage the women to chart their menstrual cycles to determine when they were approaching ovulation, the optimal time for surgery.

Menkin also collected the tissue — which may or may not have contained an egg — immediately after surgery, placing it in proper culture and attempting to isolate the egg in the laboratory. If an egg was recovered, she would mix it with sperm obtained from medical students and observe it under a microscope.

This process was repeated many times, with many variations in culture medium, before fertilization occurred in February 1944. Menkin describes the experience of viewing the first embryo fertilized *in vitro*:

I felt like — who was the first man to look at the Pacific — Balboa? ... You see, I really was nobody. If you don't get a doctorate in this kind of field [embryology], you always work under other people. You're in a different category. You may want to do independent work, but you're not allowed to. But there it was ... the first fertilized egg ... what no one had ever done before.¹⁵

Frequently cited as the first person to see this creation, Rock, in fact, never saw the embryo. By the time he reached the laboratory, it had been lost. The process was repeated three times over the next several months. Although *Science* published a 1944 account of the success under the names of both Menkin and Rock, the discovery usually is referred to as Rock's success. According to his biographer, this "catapulted him to instant fame."¹⁶ Following the work on *in vitro* conception, Rock turned to further work in the area of contraception.¹⁷

Developments in livestock, laboratory, and human *in vitro* fertilization research did not necessarily occur simultaneously, despite collegial research overlap. Some advancements occurred more rapidly in one species than in another simply because certain aspects of reproduction lend themselves to mechanical duplication in some species better than in others. For example, "the capacity for maturation and fertilization *in vitro* is greater in humans,"¹⁸ largely due to the process of human egg maturation, which is more easily replicated *in vitro* than it is with livestock. Generally, scientists had concluded that lab animals were more capable of *in vitro* fertilization than larger mammals; however, Steptoe, Edwards, and Purdy would disprove this conclusion in 1978. There had been no success with *in vitro* fertilization (producing live offspring) in farm animals before 1980. The first *in vitro* fertilization calf was produced by Brackett and colleagues at the University of Pennsylvania in 1981.¹⁹ In smaller mammals, the first *in vitro* fertilization success (producing a live offspring) was with rabbits, in work carried out by U.S. researcher M.C. Chang in 1959. Chang also was instrumental in the development of the birth control pill during this period. Later, this success was replicated in mice (by Whittingham in 1968) and in rats (by Toyoda and Chang in 1974).²⁰ Births

of *in vitro* fertilization offspring in sheep, goats, and swine have occurred only within the past 15 years.

Interest in human *in vitro* fertilization rose in the 1960s following Chang's *in vitro* fertilization success with rabbits. Since the mid-1800s, it had been known that blocked fallopian tubes could cause infertility. As more animal observations were made, the possibility of using *in vitro* fertilization to help women with blocked, scarred, or missing fallopian tubes became more appealing, especially since the effectiveness of other techniques for helping women with blocked fallopian tubes was limited. One of the other techniques involved placing a woman's ovaries into her uterus, "hoping fertilization and embryo growth would occur once the egg was in the uterine cavity."²¹ The technique was hazardous and not particularly successful; one author working in the field of animal reproduction was quoted in 1988 as saying: "For women with oviductal problems, the ability to transplant ovaries into the woman's uterus for ovulation during subsequent cycles certainly deserves further evaluation."²²

Transplantation of healthy, functioning fallopian tubes from a donor has been tried in animals, but drugs needed to keep the recipient from rejecting the new tissue are highly toxic and not recommended for humans. In the late 1960s, an Australian research team had poor success with an artificial tube intended to deliver the embryo to the uterus. Infection necessitated removal of the tube.

By 1973, however, some successes had been achieved in human *in vitro* fertilization. Among the successful clinicians were a joint team from the Monash, Queen Victoria, and Royal Women's hospitals in Melbourne, Australia. Australian researchers worked in a unique environment as a result of that country's multi-million-dollar sheep industry, in which farmers were keen to boost the numbers of their valuable stock. The Melbourne team had been working on ways to overcome blocked fallopian tubes since 1969. In addition to some techniques described above, they had experimented with egg retrieval using laparoscopy, uniting egg and sperm *in vitro* to form an embryo. The development of the embryo ceased, however, after a few days, and this did not work. An important difference is that embryos of most large animals do not usually implant in the uterus until much later than in humans, and it would therefore be necessary to keep them *in vitro* for much longer.

That year, Dr. Landrum Shettles also added his name to the history of *in vitro* fertilization. In the 1950s, Shettles had worked on human fertilization at Columbia University and had published a book that depicted eggs and cleaving human embryos. He knew the possibilities of human *in vitro* fertilization at that time, but as Fishel notes, "the American climate was becoming hostile to such views"²³ and "debate about the social implications of embryological research was firmly on the public agenda in the United States."²⁴ With public research funds for human embryological research at an all-time low, Shettles's exploration was temporarily curbed.

In 1973, however, while working as an obstetrician at New York's Columbia-Presbyterian Hospital, Shettles was confronted with the issue by John and Doris Del Zio, who were unable to have children as a result of Doris's badly scarred tubes. Shettles proposed the experimental option of trying to fertilize her eggs *in vitro*, although he had never done it before and knew little of the human clinical requirements. Shettles arranged with a colleague at another hospital to have fluid withdrawn from Doris's ovaries, believing the fluid contained an egg or eggs. Doris took the test tube containing the fluid to Shettles at his hospital, where he mixed it with John's sperm. Indicating his lack of knowledge in this then-fledgling research field, Shettles consulted with a neurologist colleague about sterilizing the mixture. The neurologist in turn informed Shettles's department head, Raymond Vande Wiele, about the obstetrician's work. Opposed to Shettles's experimentation, Vande Wiele confronted him about it, removed the lid from the mixture, and contaminated the fluid. "It was a measure of public uncertainty about IVF that Vande Wiele was pictured as both hero (for stopping an untested medical experiment) and villain (for destroying what in the public mind was an actual embryo)."²⁵

In 1974, the Del Zios sued Vande Wiele, the hospital, and the hospital's administrators for malicious destruction of their property and for psychological harm to Doris Del Zio. She was awarded \$50 000 for emotional stress caused by the termination of the procedure; the Columbia-Presbyterian Hospital and Vande Wiele were found liable for \$12 000 and \$25 000, respectively.

The Work of Robert Edwards and Patrick Steptoe

Until the 1970s, most research that led to the development of human *in vitro* fertilization occurred in fits and starts and was linked to work with laboratory animals or farm animals. While most of the groundwork for the first human *in vitro* fertilization success was laid by scientists and gynaecologists in other countries, the work of Robert Edwards and Patrick Steptoe in the United Kingdom generally is held to be the most significant on an international scale.

In *A Matter of Life: The Story of a Medical Breakthrough*, Edwards and Steptoe write candidly about the details preceding the birth of the first *in vitro* fertilization baby, of their feelings about their work, and of society's response to it. This book provides a window into the minds of the men who became known as "the fathers of *in vitro* fertilization." Written in a simple, folksy manner, the book has provided fodder for admirers and critics.

Born and raised in Yorkshire, England, Edwards originally studied agriculture at the University of Bangor, North Wales. Discovering a stronger interest in animals, he switched to zoology, where he quickly developed an interest in genetics and embryology. As an undergraduate,

he participated in reproductive cell research on mice. In the early 1950s, at Scotland's Edinburgh University, he worked on his Ph.D. in the area of manipulation of mouse embryos. He notes, "I had decided to develop new methods to modify the chromosomes of mouse embryos and I had no moral qualms about such investigations."²⁶ During his research, Edwards learned how chromosomes and embryos react when exposed to different substances — and of the subtleties of the female reproductive cycle. For example he discovered that certain research was best performed in the middle of the night, when mice are more likely to mate. He later discovered a similar "inconvenience" when working with humans, noting women are more likely to experience a surge of luteinizing hormone (LH), which causes an egg to ripen, in the evening when the adrenal system is less active.

Edwards carried out post-doctoral work, again on mice, using a compound of hormones — gonadotropins — to cause the animals to superovulate: that is, produce more than their usual one egg. His understanding of gonadotropic hormones was based on work by Alan Gates in the United States. Earlier, Edwards had noted how "marvellously convenient" it would be if "adult mice could be persuaded to ripen their eggs during the office hours."²⁷ Gonadotropic hormones proved extremely effective in causing the mice to superovulate. After the first major success at what Edwards referred to as "bombing" the ovaries with gonadotropic hormones²⁸ and leaving the mice to mate, he observed,

they were superbly pregnant, superlatively pregnant. Excited, we autopsied some of them immediately. There were fetuses everywhere ... Fetuses appeared from behind the liver ... adjacent to the kidneys ... tucked between the folds of the alimentary canal. One female carried 37 baby mice, living and perfectly normal ... the body weight of the mothers was actually less than the combined weights of their fetuses.²⁹

Amidst this research, Edwards noted, "there were other exciting prospects ... what about human beings. Those women who had difficulty in having children — could not they be helped?"³⁰ Indeed, the work of Gates, Edwards, and others would lay the foundation for what has become a mainstay of *in vitro* fertilization technology: the use of ovulation-inducing drugs to stimulate ovaries to produce multiple eggs. Edwards's enthusiasm for these hormones and their ability to produce multiple eggs is sharply contrasted with concerns expressed by neurobiologist Renate Klein about women's current use of these drugs:

For many women, these "hormonal cocktails" bring with them a host of adverse effects ranging from vision problems, nausea, dizziness, and weight gain to hyperstimulation, which is a dangerous swelling of the ovaries, or the production of cysts, which in most cases mean that egg collection is cancelled. If the ovarian hyperstimulation syndrome is not carefully watched, the ovary can burst, followed by a bad infection which may in fact cause infertility.³¹

(Collins reports that the incidence of ovarian hyperstimulation syndrome can be as much as 23 percent for the mild form and as much as 4 percent for the severe and potentially lethal form.³²)

By the early 1960s, Edwards had begun working on human ovarian tissue, having gynaecologists he knew "bequeath" him such tissue, from which he learned more about the ripening of eggs. From the U.S. work of M.C. Chang, he learned eggs must be left to ripen in the ovaries before removing them for fertilization.

In 1965, with a grant from the Ford Foundation, he went to work at Johns Hopkins Hospital in Baltimore, Maryland, with physicians Georgeanna and Howard Jones, who in 1980 would open the first *in vitro* fertilization clinic in the United States. With an unlimited supply of available human oocytes, the research team learned more about the ripening process of human eggs and made many unsuccessful *in vitro* fertilization attempts.

The following year, Edwards worked in Chapel Hill, North Carolina, on a new research tack. To allow sperm to fertilize the egg *in vitro*, he believed it must first be exposed to uterine secretions. To test this, he created a small chamber lined with a porous membrane, which was filled with semen and inserted into a woman's uterus. There, overnight, it could receive uterine secretions, but sperm could not escape the chamber. The semen would be removed the next day and placed with eggs for *in vitro* fertilization. No fertilizations occurred, however, and Edwards abandoned this approach.

Around the mid-1960s, Edwards read about the work of British gynaecologist Patrick Steptoe, who had been working with a new device known as a laparoscope. From the Greek meaning "to look into the abdomen," the instrument was a slender telescope with light generated by fibre optics. It had the advantage of being able to see around corners, making it ideal for gynaecological use in viewing internal organs.

Considerably older than Edwards, Steptoe had received the Edinburgh Fellowship of the Royal College of Surgeons in 1951, at which time he moved to Oldham in northern England. In 1959, he met Raoul Palmer, Director of Infertility at a hospital in Paris and considered by some as the "grandfather of laparoscopy," and began working with an early form of this new instrument. In the early 1960s, he attempted to introduce sperm into the fallopian tubes of women whose husbands had low sperm count, but reported no success. When the laparoscope was improved with fibre optics in the mid-1960s, Steptoe began using it regularly. He was the first to perform numerous sterilizations on women using a laparoscope.

Steptoe had recently published a textbook describing the gynaecological uses of laparoscopy and was gaining an international reputation for his work. Edwards foresaw the potential for its use in *in vitro* fertilization and contacted Steptoe, but he initially was dissuaded by the distance he would have to travel to work with Steptoe.

I would have to drive fast to Oldham when ovarian tissue became available, usually at very short notice. I would have to wait in the

hospital for 36 hours for human eggs to ripen, persuading volunteer patients waiting for laparoscopy to have intercourse so that Steptoe could then collect the sperms from the fallopian tubes.³³

Edwards soon discovered it was unnecessary to collect sperm from the fallopian tubes to achieve *in vitro* fertilization. In 1968, he met Steptoe at a conference and began working with him. That same year, Jean Purdy, a nurse turned lab technician, joined Edwards as an assistant.

A major breakthrough came in their work when Ph.D. student Barry Bavister found remarkable success in fertilizing hamster eggs *in vitro* using a newly refined culture fluid. Using some of Bavister's fluid, Steptoe, Edwards, and Purdy achieved *in vitro* fertilization with human eggs in 1968. With Bavister, they published their findings and photographs in *Nature* in February 1969, which initiated strong reactions. Some scientists claimed the authors were not the first. They argued human *in vitro* fertilization already had occurred (with less substantiation), while others pointed out the ethical and moral problems associated with their work. Many were simply disbelieving.

Following this achievement, Edwards began studying embryonic growth using eggs that Steptoe extracted laparoscopically from patients in his gynaecology practice. He experimented with cultures to find the most appropriate medium for sustaining embryonic development.

Steptoe, Edwards, and Purdy also began experimenting with the use of hormones to increase egg production per cycle. By 1969, they succeeded in developing embryos to the blastocyst stage, at which an embryo theoretically can be implanted in the uterus. The announcement of this achievement garnered additional criticism from the religious and scientific communities.

In 1971, the Medical Research Council in Britain denied their request for long-term research funds on ethical grounds and questioned the experimental use of laparoscopy. This rejection won them publicity that ultimately worked in their favour. They received generous private donations (mostly from the United States) that allowed them to improve their research facilities near Oldham.

In 1971, Edwards spoke at a Washington, D.C., roundtable discussion on *in vitro* fertilization and was sharply criticized by most panellists. Some called for a ban on his work, a plea that he viewed as "ultraconservative and unacceptable."³⁴ Overall response to his speech was mixed, and feelings at the conference ran high. Top scientists accused him in the press of potentially creating "another thalidomide catastrophe."³⁵ Although Steptoe and Edwards were somewhat bemused by such criticism, their reputations survived and they continued with their work.

That year, the team attempted to return a somewhat more mature embryo to a woman's womb but found that it did not implant. To this point, they had been using hormonal preparations only to induce ovulation; now they decided to add hCG (human chorionic gonadotropin) to help

“hold” the pregnancy. When this failed, they tried an estrogen and progesterone combination. They achieved pregnancy in a woman with blocked fallopian tubes in 1975; however, the pregnancy was found to be ectopic and had to be aborted.

In the following years, Edwards experimented with hormonal preparations, discovering that the drugs used to induce ovulation caused the uterus to be less receptive to implantation when the transfer was made within the same menstrual cycle. This led to experimentation with embryo freezing, which would allow the woman to wait until her body recovered from the ovulation drugs before re-implanting. Although they later would prove accurate in theory, Edwards’s attempts at freezing embryos were unsuccessful. He also began experimenting with bromocryptine, which he referred to as a “wonder drug,” but found little success with it.

At this point, Edwards abandoned the use of fertility drugs. He was left with working with a woman’s natural production of only one egg per cycle. A new urine test had been developed, however, that would determine when a luteinizing hormone surge was occurring and an egg could be collected. Edwards and Steptoe succeeded in retrieving the egg and fertilizing it *in vitro*.

In July 1977, they repeated this success with Lesley Brown, a patient of Steptoe’s whose severely scarred fallopian tubes had been removed, making it impossible for her to conceive naturally. After removing one egg from her ovaries without the use of fertility drugs, Edwards fertilized that egg with her husband’s sperm, and Steptoe transplanted the embryo into her uterus.

Brown maintained her pregnancy, which was heavily monitored over the next several months. Word soon leaked to the press and the scientific and medical communities. The media hounded Brown until a decision was made to hospitalize her in her penultimate month of pregnancy. By that time, she was suffering mild toxemia and high blood pressure. Security guards kept the press and others away from her. The baby grew to a reasonable size, and Brown’s toxemia was under control; however, a decision was made to deliver the baby by Caesarian section. Brown delivered a healthy baby girl, Louise, on 25 July 1978.

Timing had it that the Del Zios’ lawsuit reached trial in New York that summer. Newspapers carried the two items side by side. Bonnickson observed that the two events “brought IVF solidly into the open.” She also notes public opinion polls of the time revealed strong public approval for *in vitro* fertilization, indicating “Louise Brown’s birth [had] vindicated IVF.”³⁶ Some feminists and some ethicists, however, consider *in vitro* fertilization is not vindicated.

***In Vitro* Fertilization in Australia**

While Steptoe, Edwards, and Purdy worked in England, the Australian team of researchers in Melbourne continued equally ambitious work. Having formed an embryo *in vitro* in 1973, they were achieving embryo formation in 10 to 20 percent of their patients by 1978. That year, Alan Trounson, a reproductive physiologist who had worked at Cambridge on freezing and thawing cattle embryos, joined the Melbourne team. They achieved their first pregnancy and *in vitro* fertilization birth in 1980, when Candice Reed was born at Royal Women's Hospital.

While the Australian team has received less international acclaim than the British team, they were instrumental in achieving *in vitro* fertilization "firsts" and advancements. For example, they learned that adding Teflon[®] to a fine-gauge needle used in egg retrieval improved results. Unlike Edwards, Steptoe, and Purdy, who abandoned the use of fertility drugs before the birth of Louise Brown, the Australians continued using the drugs to stimulate ovulation predictably. They found that pregnancy rates were higher in women given human menopausal gonadotropin (Pergonal[®] or Humegon[®]) and clomiphene citrate (Clomid[®]). From their experimentation with these drugs, they learned that the more eggs retrieved, the greater the likelihood of pregnancy.³⁷ The first baby conceived *in vitro* with the use of ovarian stimulants was in a woman treated by Carl Wood and Alan Trounson. They also reported early successes in treating women with premature menopause. The Australians pioneered the practice of oocyte donation for women with no or non-functional ovaries.

In 1980-81, the clinical work of the *in vitro* fertilization program was transferred to St. Andrew's Hospital; in 1982, this was replaced by a new Monash University Infertility Service at Epworth Hospital, where it continues today. With the addition of Trounson to their team, the Melbourne group perfected a technique for freezing embryos in the early 1980s. Consequently, the team claimed all the "firsts" in relation to transfer of frozen embryos to a biological mother or an unrelated recipient. Trounson noted in a 1982 interview, "it might be possible some day for a couple to have their whole family on ice and to implant whenever they choose."³⁸

The Monash team has been characterized by upsets and controversies. Following their first pregnancy from a donated embryo in 1983, Wood and his team were attacked publicly by Steptoe and Edwards. Through a series of letters in the *British Medical Journal*, in which they published their results, Wood and his team were chastised for having used a 40-year-old donor. The pregnancy terminated at 10 weeks as the result of chromosomal abnormalities, which Steptoe and Edwards claimed were because of the donating mother's age. Their letter stated the case was "strongly suspicious of hurried decisions under pressure."³⁹

In May 1984, Wood reported that a survey of 25 children conceived *in vitro* and then aged one to three years showed they were above average intelligence and more sociable and goal-oriented than children conceived naturally. He also raised the possibility of "breeding children with specific characteristics or of eliminating other characteristics such as male aggression by injecting a male embryo with a female hormone."⁴⁰ The following week, Robyn Rowland, a physician and head of the research co-ordinating committee of the Melbourne team, resigned in protest against what she referred to as "morally reprehensible techniques" such as embryo flushing, and a fear that the doctors were using women's bodies as "living laboratories."⁴¹ Rowland voiced concerns echoed by other feminists, who had been questioning the practice since the birth of Louise Brown.

***In Vitro* Fertilization in Canada**

A review of the literature concerning the development of *in vitro* fertilization in Canada indicates the first comprehensive piece was written about the Canadian status of *in vitro* fertilization in 1987. That year, the Reproductive Endocrinology and Fertility Committee of the Society of Obstetricians and Gynaecologists of Canada (SOGC) provided a status report for the profession in the *Bulletin of the SOGC*.⁴²

The establishment of Canadian *in vitro* fertilization clinics was "quiet to the point of secrecy."⁴³ Writing in *Maclean's* magazine, Pat Ohlendorf speculated that one reason for this may have been the lack of funding provided to the first two clinics. These clinics were located at Le centre hospitalier de l'Université Laval in Quebec City, under physician Jacques-Emile Rioux, and at the University of British Columbia in Vancouver, under physician Victor Gomel. Another reason for keeping out of the public eye may have been a fear that public controversy surrounding *in vitro* fertilization would have the same deleterious effect on research and its funding as it did in the United States.

Based on media reports, the first practice was announced in August 1980 when Rioux made a plea for funding and for infertile couples to come forward.⁴⁴ At the time, Rioux indicated he had operated since 1979 and, although he had made attempts with a few women, he had achieved no pregnancies to date. He also announced he would accept unmarried couples, adding "I didn't request permission for this from the bishop." Among his four-person team was Raymond Lambert, a livestock biochemist successful with *in vitro* fertilization in cats. The clinic did not report a live birth from *in vitro* fertilization until six years after opening;⁴⁵ by 1987, the clinic had reported only 16 births from 350 couples.⁴⁶

In March 1982, the first Canadian *in vitro* fertilization babies were born. Twin boys were born to Catherine Rankin in Oakville, Ontario. They

had been conceived at the Steptoe and Edwards clinic in England, at a cost to the couple (successful after two attempts) of about \$25 000.

In addition to at least a dozen more clinics opening in Canada over the following years, a key event in Canadian *in vitro* fertilization history was the decision of the Ontario government to fund the procedure in 1985. Ontario couples have benefited tremendously from that financial coverage since 1985; however, the Ontario Minister of Health recently announced that due to overall health care funding shortages, payment for *in vitro* fertilization is now under close review.

Science, Medicine, and Magic: The Love Affair with Technology

The rapid evolution of assisted reproductive techniques over the past 20 years is best appreciated within the historical context of childbirth technology.

Riessman summarizes the shift in childbirth practices that occurred in the nineteenth century, spawning the development of medicine's role in women's reproduction:

A central arena for the struggle over professional dominance was childbirth. In colonial America, this event was handled predominantly by female midwives who, assisted by a network of female relatives and friends, provided emotional support and practical assistance to the pregnant woman ... Over a period of more than a century, "social childbirth" was replaced. The site of care shifted from home to the hospital. The personnel who gave care changed from female midwives to male physicians. The techniques changed from noninterventionist approaches to approaches relying on technology and drugs. As a consequence, the meaning of childbirth for women was transformed from a human experience to a medical-technical problem.⁴⁷

While medical historians have noted the gains achieved in the transition from midwives to physicians, some feminist historians have also noted the losses. The tradition of talking, listening to, and waiting with the labouring woman was replaced by the use of instruments and new examination techniques. Physicians and, often, middle-class women deemed these procedures superior to the social skills of midwives. "Laennec, the French physician who invented the stethoscope, argued that technologies of physical examination (consultation, palpation and percussion) were superior to the traditional method of talking to the patient."⁴⁸ Reiser observed that

without realizing what has happened, the physician in the last two centuries has gradually relinquished his unsatisfactory attachment to subjective evidence — what the patient says — only to substitute a

devotion to technological evidence — what the machine says. He has thus exchanged one partial view of disease for another.⁴⁹

Recognizing this criticism, medical schools have increasingly built into their curricula the importance of listening to patients.

The first major scientific breakthroughs in obstetrics were techniques for measuring the pelvis and the development of forceps, which “provided medicine with its first demonstrable claim to be a science.”⁵⁰ Physicians claimed the notion of harmony with nature belonged to an earlier age. Wertz adds that with this transition, “it became medically inappropriate to let nature take its course.”⁵¹

The faultiness of nature, specifically women’s nature, has been a major theme since the introduction of technology into reproduction. It has contributed significantly to the enhancement of the physician’s status in reproductive care. Wertz maintains that the faultiness of women’s nature was the prime motivation behind the development of such obstetrical interventions as episiotomies, labour induction, and Caesarian sections. Citing a 1919 medical journal, Wertz notes, “there is an increasing gestational pathology and more call for art, in supplementing inefficient forces of nature in her efforts to accomplish normal delivery.”⁵²

By the end of the nineteenth century, physicians and scientists had laid the foundation for a belief in the need for technology to “correct” Nature’s inefficiencies. Faith in science and technology was embodied in the physician, who became “the prototype of the technological man.”⁵³

An equally compelling theme that has contributed to the development of increased technology in reproduction is that of “science as magic.” Reiser observed that contemporary faith in science and technology originated in part from “a belief that a scientific spirit entered clinical practice through technology.”⁵⁴ Other observers have linked a faith in technology to a substitute for spiritual pursuits. Peter and Jean Medawar observe that when people do not find solutions with technology, they may be disappointed because “they have grown used to thinking of science and technology as a secular substitute for the miraculous.”⁵⁵

When the theme of “the faulty nature of women” is merged with that of “science as magic,” some view that one result is assisted human reproduction. (This is not simple, however, since part of the motivation of many working in this field is to help infertile couples.) In discussions and descriptions of the *in vitro* fertilization procedure, the female reproductive cycle often is characterized as faulty or second rate compared with what technology can produce, even in women with normal hormonal cycles.

In a seminar at Boston’s Beth Israel Hospital, physician Machele Seibel said the natural cycle has two “disadvantages”: its ability to produce only one oocyte and the unpredictability of the time when the luteinizing hormone will surge. A woman’s normally functioning hormonal system has come to be seen as dysfunctional simply because technology exists to

“make it better.” Seibel later noted that “the human reproductive system is very inefficient.”⁵⁶

Shannon notes that competition among physicians and scientists also promotes the view that women’s bodies must be “fixed.”

The possibility of understanding the totality of the reproductive process, as well as the capacity to control it is a powerful motivator. The desire to be first with a process or procedure is also strong ... Competition is a powerful motivator in science.⁵⁷

The all-consuming pursuit of advancements in reproductive technologies often is disguised in talk of desperate patients. Bonnicksen observes:

Physicians easily speak of the desperation of their patients, perhaps not fully comprehending that with desperation as a motivation, anything is possible in the pursuit of a vision or end. The desperate patient has given the go-ahead to try everything — a heady permission to experiment, perfect, and refine. Interestingly, no studies exist of the possible desperation of doctors and scientists to achieve their goals. Without data, one cannot assess to what extent the desperate patient is actually a projection of the driven practitioner.⁵⁸

That “heady permission,” together with a pervasive love affair with technology (on the part of many physicians and service consumers), has allowed considerable research on women to occur in assisted human reproduction over the past 20 years. Despite considerable opposition from some feminists, ethicists, and religious bodies, the practice is flourishing — testimony to society’s faith in a technological “fix.” Shannon summarizes the product of this faith in technology:

In traditional [North] American fashion we have bypassed the most critical ethical questions and gone forward assuming that the risk-benefit issue is the only relevant question ... it is understood as another blessing of science and medicine. Yet few of the individuals who developed this technique questioned its impact on society or on women, its impact on already scarce medical resources, or its relation to other technologies such as genetic engineering.⁵⁹

The Development of Feminist and Ethical Concerns About *In Vitro* Fertilization and Assisted Reproductive Technologies

Over the past 15 years, a body of literature has evolved in the area of new reproductive technologies. This literature can be referred to as a philosophical sub-discipline of reproductive ethics. Many ethical issues have been raised within and outside the medical and scientific communities

since the birth of Louise Brown in 1978. The most-discussed ethical issues include:

- Has the procedure been researched thoroughly?
- Who sets safety standards and how are they set?
- Is the procedure therapeutic or does it treat individual wishes?
- When considering the possibility of insurance coverage, are the procedure's costs justified when it benefits few individuals?
- What is the moral status of the frozen embryo?
- Who maintains control of the embryo and for how long?
- Does the availability of certain techniques make it impossible for couples to experience any sense of closure on their infertility?
- Are the money, resources, and health professionals' talents used on these procedures diverted from more pressing community health needs and the prevention of infertility?
- Is it ethical to continue research when the potential long-term risks to women and their offspring are unknown?

Literature relating to ethical and feminist concerns about new reproductive technologies tends to separate these two perspectives. Texts that offer a predominantly medical or scientific discussion of *in vitro* fertilization and assisted reproductive techniques sometimes carry a chapter or a few paragraphs on ethical issues. Coverage of ethical issues often looks at the implications for the family, for the couple, or for society. They also may include information about religious opposition to the techniques based primarily on moral grounds. They rarely mention the implications for women.

In contrast, a body of literature that highlights women's experiences in relation to *in vitro* fertilization and assisted reproductive techniques is seen as set apart from other sources of information. Overall stresses that *both* bodies of literature discuss ethical aspects of *in vitro* fertilization and assisted reproductive techniques; one is non- or anti-feminist, the other is feminist. The non-feminist or anti-feminist perspective more specifically "tends to avoid, overlook or minimize" the central relationship between women and reproduction, while a feminist perspective highlights that centrality and women's experiences, needs, and behaviour in relation to it.

To clarify what is meant by a feminist perspective, feminism inevitably must be defined. Overall provides this rather lengthy, but comprehensive, definition:

A feminist perspective involves a commitment to understanding women's experience, beliefs, ideas, relationships, behavior, creations, and history. It stresses women's own perceptions; that is, how events, institutions, social groups, and individuals are apprehended and interpreted by women. It highlights those elements of women's personal and social experience which are common and shared as well as those which are

distinct and diverse. This focus is justified by the fact that women's experience and history have for the most part been suppressed, ignored, manipulated, and exploited, both in the past and in the present. It is therefore necessary to recover what has been lost, to give recognition to what has been ignored, to revalue what has been depreciated in women's experience... [Methods for recovering these experiences] have in common ... a determination to avoid duplicating those methods used in the past which, by treating women as, at most, objects to be studied, have misrepresented and misunderstood women's experience.

... A feminist perspective is founded upon and fully informed by an awareness that women as women have been and are the victims of oppression under patriarchy, the system of male dominance. Such a claim does not necessarily imply that "men are the enemy" or that all men rule all women. But it does imply that although women are oppressed as women, men are not usually oppressed as men.⁶⁰

Overall also clarifies the distinction between the non- and anti-feminist approaches, which characterize much literature on the ethical aspects of *in vitro* fertilization and assisted reproductive techniques. An anti-feminist approach holds that women are *not* oppressed and that "differential treatment of women is justified, often on the grounds of innate differences between the sexes that lead to distinct social functions for women and for men." This perspective champions "a type of socially sanctioned biological determinism" in its view of the fundamental role differences between the sexes. By comparison, a non-feminist approach (comprising various views) is characterized as "not overtly and actively misogynistic," but "tends to ignore rather than deny women's experience." This approach "overlooks women's experience, taking male perceptions and interpretations as the norm."⁶¹

Overall's distinctions among feminist, non-feminist, and anti-feminist approaches to new reproductive technologies are important for the Commission, since one of the areas in its mandate is to examine "the implications of NRTs for women's reproductive health and well-being." Canadian ethicist Abbyann Lynch notes that "psychosocial questions have taken second place to pure scientific concerns, such as perfecting laboratory techniques."⁶² Perhaps the most-quoted Canadian ethicist on new reproductive technology-related issues, Lynch provides an analysis of the issues — while important on other levels — that includes little about the specific implications of these technologies for women. When asked about her concerns relating to the ethics of *in vitro* fertilization, Lynch commented

In vitro fertilization is a matter too important to be left to health care professionals alone. It's a social question: families are social business, the well-being of children is social business; the setting of guidelines and legislation is social business.⁶³

Often the ethical concerns associated with *in vitro* fertilization and assisted reproductive techniques are summarized without using the word

"woman." A 1983 *Journal of Medical Ethics* editorial concluded there were five categories of *in vitro* fertilization-related ethical problems:

1. Taboos related to sexuality
2. Problems associated with conflicts of interest
3. Questions pertaining to the moral status of embryos and the fetus
4. Worries stemming from moral concern about the nature of mankind
5. Difficulties relating to the resolution of moral conflicts concerning these issues⁶⁴

This summary clearly illustrates what Overall means by a non-feminist approach. It does not *actively* omit discussion of the implications for women; it simply does not include it.

In a report on *in vitro* fertilization prepared for the World Health Organization, St. Clair and Wagner note that ethical and legal issues surrounding *in vitro* fertilization tend to be too narrowly defined and deal with legal and ethical aspects of procedural details.⁶⁵ Some issues covered in detail, such as the freezing of spare embryos, affect only a small group of women who reach the embryo transfer stage. Issues significant for a larger group, such as who can have access to or will be prohibited from the procedures,⁶⁶ receive relatively little attention. This issue is seldom raised in the ethical literature on *in vitro* fertilization, although feminist writers have been discussing it for years. St. Clair and Wagner comment that such moral gatekeeping is a profound ethical issue that affects all of society and requires much more attention.⁶⁷

Often, the response of *in vitro* fertilization and assisted reproductive technique practitioners (while not a homogeneous group) to the subject's ethical aspects has been revealing. Some view such ethical questions as a nuisance to be overcome. In his report for the U.S. Office of Technology Assessment on the application of livestock research to humans, Godke notes,

society's fears and taboos take longer to change and evolve than it takes science to develop the technology ... Until this philosophy changes to some degree in our society, technology [sic] transfer of reproductive techniques and "know how" from animals to man will be hindered.⁶⁸

As a result of the lack of governmental support for their work in the early 1980s, the Monash team curbed some of their more publicly questioned activities (such as anonymous egg donation and offering *in vitro* fertilization to unmarried couples). In an interview, Trounson commented to Canadian journalist Pat Ohlendorf, "as soon as the ethical difficulties are sorted out, we will get back to work."⁶⁹ A similar comment about ethical concerns was made by the SOGC's Reproductive Endocrinology and Fertility Committee: "Ethical issues involved with oocyte and embryo

donation, embryo cryopreservation, and embryo experimentation still exist,"⁷⁰ implying that these concerns eventually will fade.

Feminist reactions to new reproductive technology procedures and to medicine's response to the practices now make up a substantial body of literature. Issues discussed in feminist writing on *in vitro* fertilization and assisted reproductive techniques often overlap with those presented by medical ethicists. As noted, however, feminist writing focusses on the larger social context and puts women at the centre of the discussion.

Among the strongest influences on feminist writing on new reproductive technologies and, indeed, the source of much writing and discourse is FINRRAGE (Feminist International Network of Resistance to Reproductive and Genetic Engineering). The group originated at a 1984 international feminist conference in Groningen, Netherlands, where a new reproductive technology workshop led to the creation of FINRET. In 1985, 74 women from 20 countries met in Vallinge, Sweden, to discuss the interrelationship between new reproductive technologies and genetic engineering. At that time, the network was renamed FINRRAGE "to emphasize both the importance of this link and the necessity of political resistance."⁷¹ At the 1985 International Women's Decade conference in Nairobi, Kenya, FINRRAGE brought forward the message that reproductive technologies and genetic engineering are of "urgent political concern for women globally."

FINRRAGE has been instrumental in directing feminist debate toward what they see as the link between technologies like *in vitro* fertilization and genetic engineering. Brodribb writes that she feels *in vitro* fertilization is a key procedure in the development of genetic engineering methods because it makes available early human embryos.⁷² This contrasts with statements made by numerous women at the Public Hearings of the Commission and in various panel discussions and media interviews since its creation; that is, that one technology, such as *in vitro* fertilization, has little to do with other technologies such as genetic engineering and sex selection.

A strong, consistent theme in the feminist literature on *in vitro* fertilization and assisted reproductive techniques is that infertility is a social problem that has become medicalized;⁷³ *in vitro* fertilization and assisted reproductive techniques represent the medicalization of infertility. Another main tenet of feminist writing on *in vitro* fertilization and assisted reproductive techniques is that resources directed toward these technologies would be better spent on the prevention of infertility. This would include more education about prevention of, and treatment for, sexually transmitted diseases; changes in occupational health and safety regulations to protect the fertility of men and women; developing contraceptives that do not put fertility at risk; and improved social support systems for women choosing to leave the workforce temporarily to bear children at the age most suitable to themselves.

Feminists also have pointed out that these technologies may not serve women's best interests. Brodribb states that "the momentum of science is

the motor [behind *in vitro* fertilization], and not concerns about women's wellbeing."⁷⁴ Williams and others have noted that, by creating dependency on technology and the hope of ever-new techniques, it may be difficult for some women to stop trying to become pregnant and get on with their lives. Others express concern that *in vitro* fertilization is rarely presented to women as an experimental procedure, nor are side-effects and unknown long-term effects of drug use discussed with women. Feminist writers have raised concerns because of the drugs used in *in vitro* fertilization and their link to the unanticipated harmful effects of drugs like diethylstilbestrol (DES), Thalidomide®, and Depo-Provera®. Soon after the birth of Louise Brown, biologist Ruth Hubbard commented, "as a society, we do not have a very good track record in anticipating the problems that can arise from technological interventions in complicated biological systems."⁷⁵

Naturally, feminist reactions to *in vitro* fertilization and assisted reproductive techniques are not homogeneous.⁷⁶ In addition to the feminist literature essentially opposed to *in vitro* fertilization and assisted reproductive techniques, there is a smaller but growing body of literature supporting the technology. This latter body of literature suggests *in vitro* fertilization and assisted reproductive techniques represent expanded reproductive choices for women. This literature is seen as part of the debate on reproductive choice, which feminists have carried out in relation to abortion for an even longer period. Birke et al. summarize this perspective:

Although it has its limitations, the rallying cry of the struggle over abortion, that it should always be a woman's right to choose, remains for us central to developing a feminist politics of reproduction. If women want to try technological solutions to their reproductive problems, we may be unhappy about the risks they could be taking with their own health; if women want to avoid bearing children suffering from a particular disease, we may have fears about the implications for society. But we feel that women, and women alone, should be the ones to make the choice.⁷⁷

Warren, in her analysis of feminist concerns about *in vitro* fertilization, also states:

It is too soon to conclude that this new reproductive technology will not serve women's interests. If women and other underrepresented groups can gain a larger presence in the medical and research professions, and if suitable modes of regulation can be implemented, then the NRTs may provide more benefits than dangers. If not, then feminists may be right to remain somewhat sceptical about the long-term value of these new technologies for women.⁷⁸

While within the feminist literature on *in vitro* fertilization and assisted reproductive techniques there are differing perspectives on the benefits of these techniques to women, most of the literature that explores the relationship to women's health questions the lack of involvement of women

in the practice and decision making and the lack of full study on the harms to women's health.

Conclusion

We have seen through this historical development that the earliest and most rudimentary experimentation in mammalian reproduction paved the way for the more sophisticated present-day practice of *in vitro* fertilization and its related techniques. This development has occurred within a social framework that has nourished its growth. From early Aristotelian belief of women's subordinate contribution to the reproductive process to the twentieth-century belief in the faultiness and inefficiency of women's reproductive organs, a social backdrop has existed that has allowed for the development of *in vitro* fertilization and assisted reproductive techniques, in spite of pockets of resistance to this experimentation dating back several decades. Growing numbers of women and couples with fertility problems will invariably benefit as experimentation continues and techniques become more refined. But as the development becomes more complex, so too will the ethical questions, and the feminist and ethical challenges promise to become more rigorous.

Key Events in the Development of *In Vitro* Fertilization and Assisted Reproductive Technologies

Early third century BC	Herophilus discovers fallopian tubes (rediscovered and named for Gabriele Fallopio in the seventeenth century)
Late seventeenth century	Van Leeuwenhoek invents microscope; also makes first drawings of spermatozoa
1694	Harsoeker makes drawing of Homonculus curled within the head of a sperm (others believed egg contained the individual) ⁷⁹
1745	Bonnet demonstrates in animals that unfertilized eggs have the potential to occasionally develop into complete entities (parthenogenesis) ⁸⁰
1782	Use of artificial insemination (AI) and effect of cooling spermatozoa in dogs and other mammals ⁸¹
1790	First reported birth from AI with husband's sperm, in Britain ⁸²

- 1797 Haighton experiments with fallopian tubes of rabbits⁸³
- 1797 Cruikshank pioneers embryo recovery from rabbit's fallopian tube⁸⁴
- 1822 Von Baer, considered "father of modern embryology," publishes *The Developmental History of Animals*, which contained carefully documented observations on eggs and their developmental stages, demonstrating progressive differentiation⁸⁵
- Early 1840s Bishcoft and Barry demonstrate spermatozoa penetrating the egg's zona pellucida (learning that egg would not develop without presence of sperm)⁸⁶
- 1870s Hertwig and Fol demonstrate the presence of two nuclei (male and female pronuclei) in the cytoplasm of a fertilized egg ["first evidence that units binding successive generations had been shifted from the cell to its nucleus"]⁸⁷
- Von Waldegr-Hartz observes thread-like structures in the cell during the process of cell division, transferred to daughter cells after cell division; names these structures *chromosomes*⁸⁸
- 1878 First attempts at *in vitro* fertilization of mammalian eggs made by Viennese embryologist Schenk⁸⁹
- 1890 First documented embryo transplantation producing offspring (rabbits)⁹⁰
- 1891 Heape demonstrates rabbits' fertilized eggs could be retrieved and subsequently transferred to a recipient⁹¹
- 1895 Morris (United States) publishes his work on surgical approach to clearing blocked fallopian tubes (grafting ovarian tissue into the uterus or oviduct)⁹²
- 1896 Knaver (Germany) discovers estrogen⁹³
- 1898 Beard discovers corpus luteum⁹⁴
- 1907 Harrison demonstrates cell function was normal after growth *in vitro* by explanting small pieces of medullary tube tissue from frog embryos into clots of frog lymph⁹⁵

- 1909 Johannsen (Denmark) coins the term *gene* to describe physical units located at definitive positions along the chromosome⁹⁶

Estes (United States) refines procedure of grafting ovary onto uterus (Estes operation)
- 1910 Jacobaeus (Sweden) uses term *laparoscopy* based on his work and that of Kelling (Germany)⁹⁷
- 1920s Carrel develops sterile tissue-culture procedures to prevent bacterial contamination⁹⁸

Smith's work with rats establishes relationship between pituitary gland and reproductive processes⁹⁹
- 1929 Kalk (Germany) performs 100 laparoscopic examinations, "bringing the study of pathology of the internal organs into practice for many clinicians"¹⁰⁰

Coner and Allen (United States) identify progesterone as an active product of the corpus luteum; Allen extracts progesterone from the corpus luteum and maintains pregnancy in ovariectomized rabbits¹⁰¹
- 1930s Rock (United States) establishes relationship of the gestational effect on the endometrium to the occurrence of ovulation; numerous researchers demonstrate the effects of estrogen and progesterone on ovulation and the menstrual cycle¹⁰²
- 1931 Kanus (Austria) and Ogino (Japan) demonstrate ovulation occurs midway between two menstrual periods¹⁰³
- 1940s Decker (United States) perfects culdoscopy technique for viewing female pelvic region by inserting instrument through the vagina¹⁰⁴
- 1944 Menkin and Rock fertilize human eggs *in vitro* and publish photos of two- and three-cell embryos in the *American Journal of Obstetrics and Gynecology*¹⁰⁵
- 1947 Palmer ("father of modern-day laparoscopy") perfects *gynaecological coeloscopy*, reporting 250 successful cases; improves the transvaginal approach in 1949¹⁰⁶
- 1949 Cryoprotectant used to freeze avian and, later, mammalian semen¹⁰⁷

- 1951 Austin (Australia) and Chang (United States) independently observe "the requirement of spermatozoa to undergo certain changes which endowed them with the capacity to fertilize. This process of capacitation ... was a necessary step in the preparation of spermatozoa to IVF"¹⁰⁸
- 1953 Watson (United States) and Crick (United Kingdom) discover the molecular structure of DNA¹⁰⁹
- 1954 Chang and Morden cool preimplantation embryos to low temperatures and transport rabbit embryos from Massachusetts to Cambridge, U.K., in a cooled vacuum flask; work led to successful cryopreservation of human embryos¹¹⁰
- 1955 Major study by Chang on the fertilizability of rabbit oocytes after ovulation; emphasizes the need for adequate oocyte maturation before fertilization¹¹¹
- 1959 Chang produces live rabbit offspring by *in vitro* fertilization¹¹²
- Early 1960s Steptoe introduces laparoscopy in United States and United Kingdom¹¹³
- 1960 Introduction of clomiphene citrate, an ovulation-inducing non-steroidal agent, developed by Merrel Co. in Ohio¹¹⁴
- 1964 Steptoe performs first 50 sterilizations by means of laparoscopy¹¹⁵
- 1965 Edwards publishes report in *The Lancet* demonstrating the sequence of events during human oocyte maturation, based on work in humans and other mammals¹¹⁶
- 1967 Steptoe publishes textbook on gynaecological uses of laparoscopy¹¹⁷
- 1968 Steptoe and Edwards meet at a London gynaecological conference, where Steptoe demonstrates importance of laparoscope¹¹⁸
- 1968 Edwards and Bavister fertilize first human egg *in vitro*¹¹⁹
- 1969 Formation of collaborative *in vitro* fertilization clinical team led by Wood from Monash, Queen Victoria Medical Centre, and Royal Women's Hospital in Melbourne¹²⁰

- Step toe and Edwards (with Bavister) publish account in *Nature* of first successful human *in vitro* fertilization attempt
- 1971 Step toe, Edwards, and Purdy publicize the first human blastocyst observed after *in vitro* fertilization¹²¹
- 1972 Live offspring from frozen mice embryos¹²²
- 1973 Frozen-thawed cattle offspring produced by embryo transplantation¹²³
- 1973 Transplantation of a single gene from animals to microbes; basis for the new recombinant DNA technology¹²⁴
- 1973 Melbourne team achieves two *in vitro* fertilization pregnancies¹²⁵
- 1975 Step toe and Edwards achieve pregnancy following *in vitro* fertilization and embryo transfer; pregnancy proved to be ectopic and was terminated¹²⁶
- U.S. government bans human embryo research
- 1978 July 25 — birth of Louise Brown, first baby conceived *in vitro*, by Caesarian section in Oldham, England
- Dividing of mouse embryos to produce genetically identical genotypes
- Transplantation of ovaries between cows¹²⁷
- 1979 Transplantation of a synthesized gene¹²⁸
- January — second *in vitro* fertilization baby born in Glasgow, Scotland (*in vitro* fertilization procedure conducted by Step toe and Edwards)¹²⁹
- Multiple offspring of sheep produced by embryo micromanipulation¹³⁰
- May — U.S. Health Department approves *in vitro* fertilization and embryo research in principle¹³¹
- Trounson joins *in vitro* fertilization team at Monash, bringing experience in cattle embryo freezing¹³²
- Canadian *in vitro* fertilization clinic opens at University of Laval

- 1980 Private *in vitro* fertilization clinic in the United States opens in Norfolk, Virginia, headed by physicians Howard and Georgeanna Jones¹³³
- Birth of (third) *in vitro* fertilization baby, at Royal Women's Hospital in Melbourne¹³⁴
- 1981 December — *in vitro* fertilization baby born in the United States¹³⁵
- In vitro* fertilization cattle offspring born¹³⁶
- Transplantation of a gene from one species to another (mice)¹³⁷
- 1982 Practical approach developed for splitting later-stage cattle embryos to produce genetically identical twins¹³⁸
- March — Canadian *in vitro* fertilization twins born
- May — Victoria (Australia) sets up Waller Committee¹³⁹
- July — United Kingdom sets up Warnock Committee of Inquiry into Human Fertilisation and Embryology
- 1983 Nuclear transplantation in mice embryos by microsurgery and cell fusion¹⁴⁰
- Australian physicians (under Wood) at Monash University achieve pregnancy by implanting a donor egg, fertilized *in vitro* by donor sperm, in an infertile woman; spontaneous abortion at 10 weeks¹⁴¹
- May — Pregnancy achieved with frozen embryo (Woods team at Monash) in a woman with blocked fallopian tubes; miscarriage at 24 weeks¹⁴²
- July — Buster (Harbour-UCLA Medical Center, Torrance, California) reports two pregnancies by non-surgical intrauterine transfer of fertilized eggs from donors to infertile women¹⁴³
- November — Australian woman gives birth from a donated egg fertilized *in vitro*¹⁴⁴
- 1984 February — Buster et al. report human embryo-transplant baby (donor to surrogate mother) at UCLA Medical Center in California¹⁴⁵
- March — Birth of frozen-embryo baby (Monash team)¹⁴⁶

- Creation of FINRRAGE (Feminist International Network of Resistance to Reproductive and Genetic Engineering)
- June — Release of *The Warnock Report on Human Fertilisation and Embryology*
- November — Melbourne donor egg baby born¹⁴⁷
- 1985 May — gamete intrafallopian transfer (GIFT) baby born to Scottish woman, treated in Texas¹⁴⁸
- Release of the Ontario Law Reform Commission's *Report on Human Artificial Reproduction and Related Matters*
- Transgenic offspring produced in swine and sheep¹⁴⁹
- Offspring produced in sheep by embryo splitting¹⁵⁰

Glossary

Blastocyst: the last stage of an embryo in its cell division before it implants into the uterine wall

Cleavage: division into distinct parts; the early successive splitting of a fertilized ovum into smaller cells^b

Cloning: process that results in one or many cells identical to each other and to the source^c

Coelioscopy: method of examining the peritoneal cavity involving inflation with sterile air passed through a hollow needle and insertion of a cystoscope through a trocar into the space^a

Cryopreservation: maintenance of the viability of excised tissue or organs by storing at very low temperatures;^a popularly known as "freezing"

DES: abbreviation for diethylstilbestrol; a synthetic form of the hormone estrogen, widely prescribed to women in the 1940s, 1950s, and 1960s to prevent miscarriage; found in the 1970s to cause a rare cancer and various reproductive problems in the daughters and sons of users

Ectopic pregnancy: dangerous condition in which an embryo develops outside the uterus, usually in a fallopian tube^c

Embryo: collection of cells (*conceptus*) from fertilization to the end of the eighth week of pregnancy^c

Embryo transfer: embryo replacement; procedure in which one or more embryos are placed or replaced into the uterine cavity by means of a fine, polyethylene catheter

Fallopian tubes: tubes extending from either side of the uterus to near each ovary, where they open and collect eggs released after ovulation; fertilization occurs in the tubes and, occasionally, an embryo lodges here, resulting in an ectopic pregnancy^c

Fetus: unborn conceptus between the ninth week of pregnancy and birth^c

Gamete: the male spermatozoon or the female ovum^b

Genes: nucleoproteins that determine bodily functions and physical characteristics; found in all cell nuclei; humans have an estimated 100 000 genes

GIFT: abbreviation of gamete intrafallopian transfer; technique involving placement of gametes in the fallopian tubes^c

Laparoscope: type of trocar with an illuminating mechanism with which to examine the peritoneal cavity, the abdominal viscera, and, in particular, the surface of the peritoneum and the liver^a

Laparoscopy: act or process of examining the peritoneal cavity and its contents by means of a laparoscope^a

Luteinizing hormone (LH): hormone produced by the female pituitary in large amounts to spur ovulation, and by the male pituitary to stimulate testosterone production^c

Oocyte: egg

Ovulation: process in which an egg is released from a follicle in an ovary, on average every 28 days^c

Progesterone: hormone secreted mainly by the ovaries after ovulation and by the placenta during pregnancy, essential for implantation and continuation of pregnancy^c

Transgenic: plant or animal altered or given extra gene; for example, transgenic mice have an extra gene for growth hormone, resulting in "supermice"^c

Trocar: sharp instrument carrying a cannula (glass or metal tube or blunt needle) around it for piercing body cavities and withdrawing fluid^a

Zona pellucida: the transparent, non-cellular secreted layer surrounding an ovum^b

Key

- (a) *Butterworths Medical Dictionary*, 2d ed., 1989.
- (b) *Dorland's Pocket Medical Dictionary*, 23d ed., 1982.
- (c) Glossary from Susan Downie, *Baby Making: The Technology and the Ethics*, 1988.

Notes

1. S. Fishel, "IVF — Historical Perspective," in *In Vitro Fertilisation: Past — Present — Future*, ed. S. Fishel and E.M. Symonds (Oxford: IRL Press, 1986), 16.
2. A.L. Bonnicksen, *In Vitro Fertilization: Building Policy from Laboratories to Legislatures* (New York: Columbia University Press, 1989), 5.
3. *Ibid.*
4. Aristotle, "On the Generation of Animals," in *Philosophy of Woman: An Anthology of Classic and Current Concepts*, 2d ed., ed. M.B. Mahowald (Indianapolis: Hackett Publishing, 1983), 268.
5. *Ibid.*
6. C. Smith-Rosenberg and C. Rosenberg, "The Female Animal: Medical and Biological Views of Woman and Her Role in Nineteenth-Century America," in *Women and Health in America: Historical Readings*, ed. J.W. Leavitt (Madison: University of Wisconsin Press, 1984), 15. For more information on the rationale of women's frail constitutions as a basis for keeping them out of higher education, see

L.M. Newman, ed., *Men's Ideas/Women's Realities: Popular Science, 1870-1915* (New York: Pergamon Press, 1985).

7. Fishel, "IVF — Historical Perspective," 2.

8. *Ibid.*

9. C. Wood and A. Trounson, eds., *Clinical In Vitro Fertilization* (New York: Springer-Verlag, 1984), 2.

10. R. Godke, "Animal Reproductive Technologies and Their Potential Applications for Human Fertility Problems: A Review," in U.S. Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices, Contractor Document*. Vol. I, *Research* (Washington, DC: OTA, 1988), 7.

11. *Ibid.*, 10.

12. H. Rose, "Victorian Values in the Test-Tube: The Politics of Reproductive Science and Technology," in *Reproductive Technologies: Gender, Motherhood and Medicine*, ed. M. Stanworth (Minneapolis: University of Minnesota Press, 1987), 170.

13. L. McLaughlin, *The Pill, John Rock, and the Church: The Biography of a Revolution* (Boston: Little, Brown, 1982), 66.

14. *Ibid.*, 69.

15. *Ibid.*, 83-84.

16. This is not unlike the lack of credit given to Jean Purdy, assistant to Edwards and Steptoe. In research carried out for this paper of the many references to the first live birth resulting from IVF, Purdy is rarely mentioned. The accomplishment goes down in history as that of Edwards and Steptoe.

17. These comments about Menkin and Rock are not meant to reflect poorly on Rock, who made an important contribution to women's reproductive health. The lack of recognition of Menkin's contribution to the work on human IVF is much more a reflection of the role played by the media and the medical establishment in eulogizing "great men."

18. Godke, "Animal Reproductive Technologies," 24.

19. *Ibid.*, 33. The first Canadian successes were by Sirard and Lambert in Quebec in 1985 and 1986 (*ibid.*, 34).

20. *Ibid.*, 32.

21. Wood and Trounson, *Clinical In Vitro Fertilization*, 45.

22. Godke, "Animal Reproductive Technologies," 15.

23. Fishel, "IVF — Historical Perspective," 11.

24. Rose, "Victorian Values," 170.

25. Bonnicksen, *In Vitro Fertilization*, 17.

26. R. Edwards and P. Steptoe, *A Matter of Life: The Story of a Medical Breakthrough* (London: Hutchison, 1980), 22.

27. *Ibid.*, 27.

28. *Ibid.*, 38.

29. *Ibid.*, 30.

30. Ibid., 31.
31. R. Klein, "Women as Body Parts in the Era of Reproductive and Genetic Engineering," *Health Care for Women International* 12 (1991), 396-97.
32. R. Collins, "Recent Progress in Gonadotropin Therapy," in *Ovulation Induction* (New York: Springer-Verlag, 1991).
33. Edwards and Steptoe, *A Matter of Life*, 61.
34. Ibid., 114.
35. Ibid., 117.
36. Bonnicksen, *In Vitro Fertilization*, 18.
37. C. Wood et al., "Factors Influencing Pregnancy Rates Following In Vitro Fertilization and Embryo Transfer," *Fertility and Sterility* 43 (1985), 247.
38. P. Ohlendorf, "Beyond the Limits of Life," *Maclean's* 95 (15 November 1982), 54.
39. P. Singer and D. Wells, *Making Babies: The New Science and Ethics of Conception* (New York: Charles Scribner's Sons, 1985), 61.
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41. Ibid.
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43. Ohlendorf, "Beyond the Limits," 52.
44. D. Thomas, "Tempest in a Test Tube," *Maclean's* 93 (18 August 1980): 21.
45. M. Boisvert, "La fécondation *in vitro* au Québec," *La Gazette des femmes* 7 (July-August 1985): 17-18.
46. A. Pappert, "Critics Worry Women Not Told of Fertilization Program Risks," *Globe and Mail* (6 February 1988): A14.
47. C.K. Riessman, "Women and Medicalization: A New Perspective," *Social Policy* 4 (Summer 1983), 6.
48. A. Oakley, "From Walking Wombs To Test-Tube Babies," in *Reproductive Technologies: Gender, Motherhood and Medicine*, ed. M. Stanworth (Minneapolis: University of Minnesota Press, 1987), 43.
49. S.J. Reiser, *Medicine and the Reign of Technology* (New York: Cambridge University Press, 1978), 227.
50. D. Wertz, "What Birth Has Done for Doctors: A Historical View," *Women and Health* 8 (Spring 1983), 9.
51. Ibid.
52. C.A. Ritter, "Why Prenatal Care?" *American Journal of Gynecology* 80 (1919): 531; Wertz adds, "in spite of the belief that these interventions would improve maternal and neo-natal outcomes, when the first major evaluation of birth status took place in the 1920s, it was found that virtually no progress was made. Accidents of labour and death from infection had actually increased ... the number of infant deaths attributable to birth injuries had actually increased by 40 percent

- to 50 percent between 1915 and 1919 and was later attributed to the increase in interventions" (Wertz, "What Birth Has Done for Doctors," 20).
53. Reiser, *Medicine*, x.
 54. *Ibid.*, 161.
 55. P.B. and J. Medawar, *The Life Sciences: Current Ideas of Biology* (New York: Harper and Row, 1977).
 56. M.M. Seibel, "A New Era in Reproductive Technology: In Vitro Fertilization, Gamete Intrafallopian Transfer, and Donated Gametes and Embryos," *New England Journal of Medicine* 318 (1988), 831.
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 58. Bonnicksen, *In Vitro Fertilization*, 29.
 59. Shannon, "In Vitro Fertilization," 164.
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 61. *Ibid.*, 4.
 62. A. Lynch, "In Vitro Conundrum," *University of Western Ontario Alumni Gazette* 64 (2) (1987): 9.
 63. *Ibid.*, 9.
 64. From the editorial "In Vitro Fertilization," *Journal of Medical Ethics* 9 (1983): 187-88, 199.
 65. P.A. St. Clair and M. Wagner, "Are In Vitro Fertilization and Embryo Transfer of Benefit to All?" *Lancet* (28 October 1989): 1027-30.
 66. St. Clair and Wagner refer to a stipulation of the practice of certain reproductive technologies in France, whereby only married men can donate sperm and only married women can receive it.
 67. St. Clair and Wagner, "Are In Vitro...?"
 68. Godke, "Animal Reproductive Technologies," 144.
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 70. Society of Obstetricians and Gynaecologists of Canada, "In-Vitro," 19.
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Development of *In Vitro* Fertilization and Related Assisted Reproductive Techniques," in *New Reproductive Technologies and the Science, Industry, Education, and Social Welfare Systems in Canada*, vol. 5 of the research studies of the Royal Commission on New Reproductive Technologies (Ottawa: Minister of Supply and Services Canada, 1993).

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81. Godke, "Animal Reproductive Technologies."

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83. Fishel, "IVF — Historical Perspective," 2.

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90. Godke, "Animal Reproductive Technologies."

91. Fishel, "IVF — Historical Perspective," 11.

92. Ibid., 6.

93. Ibid., 9.

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98. Ibid., 5.

99. Ibid., 9.

100. Ibid., 7.

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102. Ibid.

103. Ibid., 10.

104. Edwards and Steptoe, *A Matter of Life*, 69.

105. Fishel, "IVF — Historical Perspective," 11.

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107. Godke, "Animal Reproductive Technologies."

108. Fishel, "IVF — Historical Perspective," 12.
109. Ibid., 5.
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112. Godke, "Animal Reproductive Technologies."
113. Downie, *Babymaking*.
114. Fishel, "IVF — Historical Perspective," 10.
115. Edwards and Steptoe, *A Matter of Life*, 75.
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117. Edwards and Steptoe, *A Matter of Life*, 75.
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119. Downie, *Babymaking*.
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121. Fishel, "IVF — Historical Perspective," 13.
122. Godke, "Animal Reproductive Technologies."
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125. Downie, *Babymaking*.
126. Edwards and Steptoe, *A Matter of Life*, 129-30.
127. Godke, "Animal Reproductive Technologies."
128. Ibid.
129. Downie, *Babymaking*.
130. Godke, "Animal Reproductive Technologies."
131. Downie, *Babymaking*.
132. Wood and Westmore, *Test Tube Conception*, 48.
133. Singer and Wells, *Making Babies*, 3.
134. Wood and Westmore, *Test Tube Conception*, 49.
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146. Singer and Wells, *Making Babies*, 82.
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The Professions Involved in New Reproductive Technologies: Their Present and Future Numbers, Training, and Improvement in Competence

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Executive Summary

The purpose of this project was to collect reliable and valid data regarding the educational preparation and the maintenance of competence efforts currently undertaken by four professions in Canada whose work was considered relevant to the Commission mandate. The professions of law, medicine, nursing, and social work were chosen for study by project staff.

Initial planning with project staff identified eight target universities and a range of professional topics of particular interest to the Commission. A careful review of relevant published and unpublished literature was conducted to describe the present and projected health human resources (physicians and nurses) available in the new reproductive technologies.

A wide contact net was developed to identify patterns of responsibility within faculties of the professional schools at the target universities. Through an extensive combination of personal telephone calls and multiple follow-up letters, descriptive curriculum materials

were requested from 30 individual schools (four professional schools in each of eight universities, except for McMaster University, which has no law school, and the University of Saskatchewan, which has no school of social work).

Based on preliminary review of submitted materials, formal interviews were scheduled with faculty at three universities (Saskatchewan, Dalhousie, and McGill) randomly chosen to be the first subset data sources. At each site, key informants from each of the target professions were interviewed in depth about how their curriculum treated topics and issues of interest to the Commission.

A preliminary analysis of this information indicated a shortcoming in research procedure: informants initially contacted by telephone and mail at each school were not as accurate as might be expected about the nature and structure of their own school's curriculum. During the interviews at the schools, it was invariably discovered that courses that dealt with target topics had not been previously identified to the researchers. Thus, a second round of telephone calls and follow-up letters was needed to confirm course content descriptions partially remembered by various key informants, some from initial contacts and some from the interviews. As the curriculum content grids for each school emerged, they were sent individually to each responsible faculty, and in total to any identified curriculum chairperson and to the dean of the school. In each case, these individuals were asked to review the description for accuracy and to correct any misapprehensions on the part of the researcher. This detailed, post-interview follow-up procedure was incorporated into the second phase of interviews with faculty from Université Laval, the University of Toronto, McMaster University, the University of Calgary, and the University of British Columbia.

Analysis of the detailed qualitative information resulted in detailed descriptions of the coverage undertaken in the 1991-92 school year by these four professions across the eight target universities in content areas of interest to the Commission. In addition, significant changes were noted at the level of individual schools within universities, at the university level across schools, and at the professional level across universities.

General conclusions are possible about the amount and nature of target topic coverage by these professions across the universities.

1. The new reproductive technologies, per se, are rarely found explicitly in any curriculum. Usually, these topics are woven into existing course structures by particularly interested individual faculty members. Thus, for example, one could not reliably expect to find topics of sexuality in all social work curricula, but would find the sexuality issues woven through social work curricula in a school that includes a faculty member who has a specific interest in that area.

Other consistent patterns emerged within these data:

2. There is no similarity among schools within a university; instead, the commonalities emerged by profession across universities.

3. A repeated pattern was observed across the professions in the degree of individual autonomy versus collective faculty accountability or organized curriculum control. This ordered range across the professions was inversely related to the degree of collegiality in shared curriculum goals at undergraduate and post-graduate levels. Highest in individual autonomy was law, followed by social work, medicine, and nursing. The order was reversed in terms of perceived collegiality and shared curriculum goals within any one faculty.
4. There were reliable and varying degrees of relationship between faculties and the actual practice of that profession. This variability matched the value placed by the faculty on practising professionals in the same profession. Nursing was high on both relationships, followed by medicine, social work, and law.
5. The utility to practitioners of "scholarship" conducted by faculty in that profession followed a similar consistency. Nursing scholarship was considered highly relevant, followed by medicine, social work, and law.
6. Data indicated that continuing education for the professions is not well organized for nursing or social work. One reason for the disorganization is a lack of clear policy within the faculty, or within the profession, about where the responsibility for maintenance of competence lies. Law perceives continuing legal education as a responsibility of the provincial law societies, which are seen to be more relevant than the law school faculties to practising professionals. Available continuing legal education tends to be uniformly skills oriented and resolutely committed to helping participants develop marketable expertise. Medicine, alone among the studied professions, places continuing medical education as a responsibility of the medical school faculty (with the exception of the University of Saskatchewan, where continuing medical education has recently become the responsibility of the provincial medical association). Even here, the notion of a developmental, planned curriculum for the systematic maintenance and enlargement of competence does not exist. Continuing medical education courses, at their best, are derived from the interests and perceived areas of knowledge or skill deficit of participants. More often, courses are organized following interests of the medical school faculty and of specialists looking to establish or augment a referral network.
7. The process of curriculum change among the various professional schools was radically different, but it was consistent within a profession across universities. All curriculum change under way in nursing tended to follow a centralized model that would convert an entire curriculum at the same time. In contrast, change in law schools, as currently undertaken, occurs when individual faculty members make modifications in their own courses, and even then only up to a point well short of the magnitude of change that might

attract attention from the graduate school. Social work curriculum change tends to be more like law, and medicine somewhat more like nursing, but they are still mostly separated into basic and clinical sciences.

Some implications of these observations will be useful to the Commission. Primarily, any specific message for change in the product produced by these schools, the process by which this product is produced, or the structure of how these professional schools operate and thereby the models they provide to their graduates will have to vary significantly by profession. For example, any appeal to change the output of professional nursing schools will be efficiently considered, designed, developed, and implemented by existing central structures in each nursing school, and will be effectively brought to the attention of each nursing school by their joint body, the Canadian Association of University Schools of Nursing. The law profession, on the other hand, has little or no central tendency in any one faculty, and no nationally powerful body across law schools that can act in any efficient manner to consider, develop, design, or implement central curriculum change. Change within this profession will be incremental, and will most likely be effected by identifying interested individuals within each law school faculty and supplying curricular ideas and materials to support curriculum change directly to those individuals. Schools of social work tend to be more like law schools, and schools of medicine tend to be more like schools of nursing.

Project Objectives

This project was designed to provide information to the Royal Commission about the professionals involved in the delivery of reproductive technologies to Canadians. Four professions were identified as being central to the issues facing the Royal Commission: law, medicine, nursing, and social work. The project sought a thorough understanding of the present curricula for the education, training, and re-education of these four types of service providers. The project aimed to provide an accurate reflection of the present and immediate planned future of these curricula in eight target universities across Canada. The purpose of understanding the preparation and maintenance of competence programs is to ground in reality any recommendations the Royal Commission may choose to make in the human resources area.

Methods and Procedures

Phase I — Project Planning

The project began with detailed planning involving representatives from each of the research sections of the Commission and the contractor.

Decided at that time were sources and directions to pursue in the literature search, universities and professions to be contacted, and key areas of curriculum to be followed in each professional course.

Phase II — Literature Review (see Appendix 1)

The literature review was designed to be a comprehensive examination of published and unpublished materials on health human resources relevant to the new reproductive technologies. The review identified reports published within the last five years on health human resources policies. Emphasis in this search was placed on literature published in Canada, the United States, the United Kingdom, the Netherlands, Germany, and Sweden. The literature review concentrated on physician and nurse resources and notes common trends in supply, training, and control procedures.

Unpublished studies prepared by medical associations and societies were collected and analyzed. Representatives of the Society of Obstetricians and Gynaecologists of Canada, the Canadian Society for Endocrinology and Metabolism, and the Canadian College of Medical Geneticists were contacted to assist in the identification of unpublished work. The Royal College of Physicians and Surgeons of Canada (RCPSC) was contacted for information about trends and post-graduate training programs. The Association of Canadian Medical Colleges was contacted to discuss information on medical career paths.

The Canadian Nurses Association (CNA) was contacted regarding information about numbers and trends in undergraduate and post-graduate training programs in nursing pertinent to the new reproductive technologies. The library of the Royal Commission was consulted to identify any further published or unpublished material.

A section of the literature review reports the author or authors, audience, methodology, and findings for each study or paper located through the review. Common trends are identified and compared with more global trends in Canada. From these data, changing trends in health human resources policy in Canada over the last five years are outlined. Change is documented in undergraduate, post-graduate, and practice supply of physicians, and physician demographics, in specialty and geographic distribution.

The literature review is found in Appendix 1.

Phase III — Curricular Materials Compilation

Beginning with contact names provided by the Royal Commission staff, and those listed in the Association of Universities and Colleges of Canada Guide, initial contact was made with all target professional schools (law, medicine, nursing, social work) in the eight target universities (British Columbia, Calgary, Dalhousie, Laval, McGill, McMaster, Saskatchewan, and Toronto).

Each contact was asked to identify curriculum chairpeople and individual faculty members with responsibility for professional education in target areas of interest to the Royal Commission. These target areas were identified by Royal Commission staff during detailed planning (Phase I) of the project.

Each of the identified responsible faculty members or curriculum chairpeople was contacted by telephone, the project was discussed with them, and their assistance was sought in providing curriculum materials. A follow-up letter was sent to each, again describing the project and requesting curriculum materials in the identified target areas.

Follow-up telephone calls were made to encourage submission of appropriate curriculum materials in target areas. These calls revealed that appropriate curriculum materials were not always available in written form and those that were available were often out of date. For these and other reasons, many faculty members were reluctant to supply curriculum descriptive material in written form. To correct this anticipated deficient information base, Phases IV and V were designed to collect curricular information from in-person interviews with key faculty members.

Phase IV — Detailed Data Collection from First Subset of Universities

The eight target universities had been sorted into first and second subsets to allow for a preliminary analysis of data emerging from the first subset of interviews. There were two reasons for this preliminary analysis: to provide focus for the ensuing data collection phases and to identify deep gaps in the data, new hypotheses, or relationships before it became too late to collect relevant corroborating data. Having two sets of universities separated by analysis time to reflect on the data also allowed for faults in the data collection mechanism to surface for subsequent collection.

Universities were sorted randomly into first and second sets. In the first set were Dalhousie University, McGill University, and the University of Saskatchewan. The second set was composed of the University of British Columbia, the University of Calgary, Université Laval, McMaster University, and the University of Toronto.

A considerable part of the interview time was required to complete data collection describing the section of professional curriculum for which the interviewees were responsible. After that description was obtained, remaining questions on the Faculty Interview Protocol (Appendix 2) were addressed.

As a part of each interview, the March 1991 brochure from the Royal Commission, *A Guide to the Research and Evaluation Program of the Royal Commission on New Reproductive Technologies*, was distributed. This brochure and contact information for the Royal Commission had been requested repeatedly by key contact individuals at the time of initial response to letters and telephone calls establishing the interviews.

The scheduled interviews had the predicted effect of producing considerably more written documentation on the target professional school curricula, some in areas known to the key informants and some beyond their immediate experience. Gaps in the curricular descriptions in the target areas of interest to the Commission resulted from incomplete information provided by key contacts, usually describing courses for which they were not directly responsible but which they thought might be pertinent to the mandate of the Commission. To rectify this situation, letters were sent to each key contact, each curriculum chairperson, and each dean detailing the information collected about their curriculum and asking them to fill in blanks and correct any errors. Remaining gaps in the descriptive data (Appendix 4) represent non-response from contacted faculty, curriculum chairs, and deans.

An initial analysis was conducted on material collected from the first subset of universities. The data were examined for differences across universities and across professional schools, the source of curriculum control, and the value sources employed by the various curricula.

As a result of the analysis, no changes were indicated in the protocols for data collection, although the elaborated program of seeking confirmation from key informants, curriculum chairpersons, and deans after the interview was also incorporated into the data collection for the second set of universities.

Phase V — Detailed Data Collection on Second Subset of Universities

The format for this series of formal interviews was identical to that evolved for the previous phase. Universities visited in this phase were the University of British Columbia, the University of Calgary, Université Laval, McMaster University, and the University of Toronto.

Integrated Data Analysis

The analysis proposed for this material involved four aspects of qualitative analysis:

1. examination of the curricular descriptions for differences among universities collapsing across professional schools;
2. examination of the curricular descriptions for differences among professional schools collapsing across universities;
3. examination of the sources of curriculum control by university and by professional school; and
4. definition of the value sources employed by the various curricula, by professional school, and by university.

The analysis proceeded by first collating all available data by professional school within universities. This collation included all written

curriculum descriptions, data from all interviews, and data from the full range of follow-up telephone calls and correspondence. Next, a compiled grid was produced to display curricular information for each professional school in each university. These grids are found in Appendix 4.

A heuristic had to be used to make grids comparable. The decision was made to display information on the curriculum as delivered in the 1991-92 academic school year. This distinction becomes important because many of the schools were in the process of curriculum change. Thus, the 1991-92 school year was occasionally the first year of a new curriculum, the last year of an old curriculum, or some combination of old and new curricula.

Comparing curricular descriptions across schools and across universities allowed analysis of the first two questions posed. The information for the latter two evaluative questions came primarily from interviews with faculty.

Conclusion of Contact with Key Informants

In April 1992, after submission of the final report to the Royal Commission, thank-you letters were sent to all contacts who provided information for this project. In the course of telephone and in-person discussion with key informants, each was informed of the steps necessary to receive a copy of the final report on this project and any other information resulting from the Commission in which they might be interested. This instruction about access to project reports was again repeated in the thank-you letter.

Results

Discussion of Curriculum Grids (Appendix 4) — Information Obtained from the Schools

First Subset Universities

Dalhousie University

Law

Only two courses were reported as being pertinent to Commission topics, and only one of those (Health Law) touched on reproductive technology.

Medicine

During the study year 1991-92, this was a traditionally structured school of medicine offering courses within disciplinary bases. Therefore, biochemistry and genetics dealt with genetic screening and diagnosis; the Department of Obstetrics and Gynaecology was responsible for all other

issues of reproductive care, including discussion of infertility. There is one interdisciplinary course on sexuality required in third-year medicine. The residency programs in both Obstetrics and Gynaecology and Family Medicine were traditional in structure. Obstetrics and gynaecology residents and fellows in internal medicine do rotations of approximately three months in the Dalhousie Infertility Clinic. Continuing medical education is considered a responsibility of this faculty. Three recent courses have dealt with target topics of interest to the Commission. The Obstetrics and Gynaecology Short Course for Family Physicians in 1991 touched on genetic screening; the same course offered in 1992 dealt with infertility. The Paediatric Short Course for Family Physicians offered in 1989 touched on issues of genetics.

Nursing

Eight courses offered by the nursing school, six of which are at the graduate level, touch on target topics for the Commission. Of these none directly considers new reproductive technologies; most consider issues of sexuality, gender issues, and women's reproductive health. Continuing nursing education is not considered a faculty responsibility.

Social Work

At least one course, BSW4010, touches on an issue of interest to the Commission: Feminist Structural Theory. Responsibility for continuing social work education is acknowledged by the faculty, but no information on recent offerings was made available.

McGill University

Law

No courses deal directly with new reproductive technologies, but 12 courses offered by this school contain topics within the Commission's mandate. No information is available on continuing legal education.

Medicine

This is a traditionally structured school with responsibilities for course content lying within the disciplines. Therefore, the Obstetrics and Gynaecology Department offers a series of lecture-based courses in Reproductive Medicine spaced throughout the undergraduate curriculum and culminating in the Obstetrics and Gynaecology Clerkship in third year. The residency programs in Obstetrics and Gynaecology, and in Family Medicine, are traditionally structured. However, a range of other residency and fellowship programs is offered in topics of interest to the Commission: an endocrinology residency and a fellowship program in maternal fetal medicine. Continuing medical education is a responsibility of this faculty and it has offered three recent courses in target topics. In a December 1991 short course, Male Infertility, there was discussion of assisted reproductive techniques for sub-fertile men and a general management of male infertility. In a June 1991 short course, Gynaecology and Office

Practice, the following topics were covered: chlamydia, office evaluation of the infertile couple, the "normal" infertile couple, and the new reproductive technologies. In February 1989 a short course, Practical Problems in Paediatrics, dealt with paediatric genetics.

Nursing

Five courses in this school deal with target topics of interest to the Commission, one of which, NUR576-308B, deals directly with reproductive technologies. The other courses focus on women's issues, sexuality, basic growth and development, and gynaecological problems. Continuing nursing education is handled by a rotating faculty committee that organizes an annual conference, the topic of which is chosen through a committee of the faculty and representation of hospital-based nurses. No reproductive issues have been covered in the last two years.

Social Work

At least five of the courses offered in this school touch on target topics of interest to the Commission. None, however, deals with new reproductive technologies.

University of Saskatchewan

Law

At least nine law courses touch on issues of interest to the Commission, although none directly deals with new reproductive technologies. Surrogacy is discussed in LAW201.6 and 208.6; the latter also discusses the embryo as property. Feminist theory is covered in two other courses and gender issues in a range of courses. Continuing legal education is not considered a faculty responsibility and is supported in part by the Law Society. For the last two years, no course has covered target topics of interest to the Commission.

Medicine

This medical school is organized traditionally, with the Obstetrics and Gynaecology Department taking responsibility for a series of lecture-based courses that provide an overview of obstetrics and gynaecology and touch on infertility and reproductive endocrinology. The post-graduate programs of obstetrics and gynaecology residency and family medicine residency are traditionally structured. Responsibility for continuing medical education was assumed by the Saskatchewan Medical Association in the fall of 1991. Course structure and offerings have yet to be determined.

Nursing

Five courses in the nursing school deal directly with topics of particular interest to the Commission, although none deals directly with new reproductive technologies. Continuing nursing education is considered a faculty responsibility, and one workshop in February 1991 dealt with fertility and infertility.

Social Work

The University of Saskatchewan has no school of social work.

Second Subset Universities

The University of British Columbia

Law

At least 12 of the undergraduate courses deal with some aspect of the target topics identified by Commission staff as within the mandate of the Commission. Two touch directly on reproductive issues: Family Law (LAW348) and Topics in Jurisprudence (LAW461). The issue of ownership of human tissue is dealt with in Real Property (LAW211), and Intellectual Property (course number unknown) is reported to touch on the issue of patent coverage for human tissue use. The other listed courses deal with a variety of topics, including feminist jurisprudence, various aspects of sexuality, and gender issues as treated within the law. Continuing legal education is handled by the Continuing Legal Education Society of British Columbia, which, in February 1988, offered a 3-hour segment on reproductive technologies within a 12-hour course titled Developing Legal Issues for Women. More recently, the society has made available a book and audio cassette outlining equality rights, and in April 1991 a short course on family practice in provincial court was held, which touched on issues around paternity.

Medicine

The School of Medicine is traditionally structured. Women's health issues are taught through a sequenced series of obstetrics courses in the undergraduate school, genetics is taught in a required medical genetics course in second-year medicine, and the only representation of reproductive technologies occurs in a first-year required medical ethics course. There is a wide variety of post-graduate training ranging from traditional residencies in obstetrics and gynaecology, family medicine, and paediatrics through to newer fellowship programs in gynaecological reproductive endocrinology and infertility, perinatology, genetics, and cytogenetics. Continuing medical education is organized by the Faculty of Medicine, and two short courses with content relevant to the Commission have been offered in the past two years. An October 1990 course in Obstetrics for Family Physicians provided an update on genetics and multiple pregnancy and information about the management of the infertile couple. A short course in Obstetrics and Gynaecology offered in November 1991 dealt in part with pelvic inflammatory disease.

Nursing

British Columbia's nursing school has four standard courses that touch on Commission-mandated topics, two of which cover reproductive technologies (NUR409A and NUR588). Continuing nursing education is coordinated by the Registered Nurses Association of British Columbia,

which has offered a recent (April 1992) clinical day devoted to advances in reproductive technology. Topics included causes of infertility, surgical treatment of infertility, *in vitro* fertilization, genetic screening, intrauterine diagnosis and treatment, and ethical and legal issues involved in reproductive technology. In addition to these materials, the association has booklets available outlining guidelines for childbirth education programs and for perinatal care and reproductive care programs.

Social Work

There are at least six courses in this school that deal with topics of interest to the Commission, although none deals directly with new reproductive technologies. Continuing social work education is assigned to a different faculty member each year, and in the past two years no pertinent courses have been offered.

The University of Calgary

Law

There are six courses in this law school that touch on Commission-mandated topics, two of which (LAW649 and LAW515) deal directly with new reproductive technologies (surrogacy and embryo status). Continuing legal education is the responsibility of the Legal Education Society of Alberta, which provided no information to this investigation.

Medicine

This course structure is part-way between the traditional discipline-based course structures usually found in medicine and the problem-based course structures that integrate content across disciplines using complex paper-based patient problems. There is, for example, an 83-hour course on the reproductive system that deals with a range of target topics for the Commission, including genetics, male and female infertility, and assisted reproductive technology. Three other required, more traditional undergraduate courses deal with genetics, sexual development, sexual disorders, and sexuality. The third-year Clerkship in Obstetrics and Gynaecology includes a half-day in the endocrine/infertility clinic and a half-day in the sexually transmitted disease clinic. The residencies in Obstetrics and Gynaecology, and in Family Medicine, are classically structured, and there is also a residency program in Medical Genetics. A fellowship program in Medical Genetics offers specialization in clinical genetics, cytogenetics, or molecular genetics. Continuing medical education is offered by the Faculty of Medicine. Recent courses have touched on preconception counselling, genetics and prenatal diagnosis, pelvic inflammatory disease, recurrent pregnancy loss, and sexually transmitted diseases. Two innovative continuing medical education support systems are offered for physicians interested in self-study — a literature-searching service with consultant review and the circulated *Bulletin of Hereditary Diseases*.

Nursing

At least 10 of the courses offered by the nursing school touch on topics of interest to the Commission. Seven are in the undergraduate program and two (NUR331 and NUR361) deal directly with infertility and reproductive technology. The graduate-level programs are more policy oriented. Continuing nursing education is handled by the Faculty of Continuing Education, and topics pertinent to women's health are integrated with other topics — for example, on family violence, palliative care, and care of the elderly. Courses are generally designed for all health professions as a group, not for nursing in particular.

Social Work

At least five of the available courses deal directly with Commission-mandated topics, primarily related to sexuality and reproduction. There is no organized continuing social work education.

Université Laval

Law

Four undergraduate courses cover material in the general areas of women's rights, parental authority, and the effects of marriage. One master's-level course (DRT-63324) on the law affecting people directly deals with mandated subjects of the Commission, including genetic screening and manipulation, research and use of embryos, commercialization of body products, and medical techniques and scientific manipulation of the body.

Medicine

The study of medicine at Laval is traditionally structured, with significant department disciplinary responsibility for subject matter. Therefore, the obstetrics and gynaecology department has responsibility for the 40 hours of introduction to reproductive methods, including the investigation of infertility and infertility due to endometriosis. The same department supervises the clinical introduction to the same area. A Medical Ethics course that deals specifically with prenatal diagnosis for genetic defects and new reproductive technologies is required at the baccalaureate level.

Nursing

Two courses in the nursing sequence deal specifically with mandated Commission topics (SIN-16989, *Les femmes et la santé*, and SIN-18716, *Déontologie infirmière*).

Social Work

Four courses in this sequence relate to the general subjects of interest to the Commission. None deals directly with new reproductive technologies.

*McMaster University***Law**

McMaster University has no law school.

Medicine

The Faculty of Medicine organizes its curriculum to engage students in medical content organized not by traditional discipline, but by usually occurring patterns of symptoms within patients; thus, six required "units" in the three undergraduate years touch on topics of interest to the Commission. There is no explicit coverage, however, of new reproductive technologies. A range of innovative workshops is organized on human sexuality and gender, and a women's health office has been recently established to provide a variety of seminars on topics involving women's health. The residency programs in Obstetrics and Gynaecology, and in Family Practice, are traditionally constructed. Continuing medical education is considered a faculty responsibility, and offers a range of recent short courses relating to topics of interest to the Commission, although none deals directly with new reproductive technologies. Of particular interest would be the short course on Gynaecology and Women's Health Issues, March 1991, which touched on infertility; the short course on Infertility Management, April 1991; the short course on Sexually Transmitted Diseases, November 1991; and the May 1991 rounds on Human Genetics. Continuing medical education at McMaster also offered a tele-medicine session on Women's Infertility and Premenstrual Syndrome (date not available).

Nursing

At least two of the undergraduate nursing courses deal with topics of interest to the Commission, although none covers new reproductive technologies directly. Continuing nursing education is handled through the same support system for continuing education as McMaster's Faculty of Medicine. All pertinent courses listed under continuing medical education in the previous section were open to nurses.

Social Work

At least three of the courses in the School of Social Work touch on topics of interest to the Commission, and one (SW3C03) uses new reproductive technologies as examples of health policy. Continuing education in social work is a newly organized joint venture with the university's Department of Continuing Studies. Course structure and topics have yet to be determined.

*University of Toronto***Law**

At least eight courses offered in law touch on topics of interest to the Commission, although only one (LAW386) deals directly with new reproductive technologies. Other courses (LAW274 and LAW267) deal with

surrogacy. Continuing legal education is the purview of the Law Society of Upper Canada. No information on course offerings was forthcoming.

Medicine

In the 1991-92 school year, the Faculty of Medicine was organized along traditional lines, with the Department of Obstetrics and Gynaecology providing lecture-based overview courses that covered topics of interest to the Commission, including sexually transmitted diseases, sexuality, and infertility. The genetics faculty provides a first-year optional course that covers prenatal diagnosis. The only coverage of new reproductive technologies in undergraduate medicine is in an ethics course required in first-year medicine. The Clerkships in Obstetrics and Gynaecology, and in Family and Community Medicine, are traditionally organized, as are the post-graduate residency programs in both departments. Continuing medical education is considered a faculty responsibility, and a wide range of courses has been offered in the last two years that would be of interest to the Commission. Seven short courses have touched on new reproductive technologies, 12 others have dealt with various aspects of infertility, and at least one course covered prenatal genetic screening.

Nursing

At least seven courses in the undergraduate program deal with topics of interest to the Commission, although only one (NUR300) deals directly with reproductive technologies. Most of the other courses deal with various issues of sexuality, gender, and family planning. No information is available about continuing nursing education in Toronto.

Social Work

The social work program at the University of Toronto offers no undergraduate-level training. Of the master's-level courses, at least two cover issues of interest to the Commission, although none deals directly with new reproductive technologies. Continuing education in social work is offered through the School of Continuing Studies. Three courses are in areas of interest to the Commission, although none deals directly with new reproductive technologies.

Macro-Level Changes in Curricula

School Level

While compiling these curriculum descriptions, it was discovered that some of the professional schools in universities are actively engaged in significant curriculum change at the school level. These changes are briefly outlined to provide the reader with a sense of the magnitude of change occurring at this level.

At the University of British Columbia, the School of Nursing and the School of Social Work are redesigning their curricula. The nursing school is re-evaluating all current courses and re-examining the "model of

nursing" from which all of the university's nursing courses and their interrelation are derived. Similarly, the School of Social Work is fundamentally going through the same process. The faculty has chosen to reorganize the curriculum around issues of gender, race, and social class as opposed to the present organization around sources of social service delivery (provincial and municipal housing and welfare systems, health care, and so on).

The University of Saskatchewan nursing school is in transition; in 1990, it introduced a new basic baccalaureate curriculum in first year. Therefore, some curricular material is still related to the "old" (1977) curriculum and some is from the "new" (1990) curriculum. The central difference between old and new curricula appears to be increased emphasis on the related basic sciences (nutrition, physiology, anatomy, biochemistry, microbiology, and pharmacology).

The School of Nursing at McMaster University has over the past decade developed a "McMaster Model of Nursing." During the last two years, it has been engaged in a redirection of curricular learning experiences and content throughout the nursing program to be consistent with this new model. The new curriculum is to be initiated in the fall of 1992. The new curriculum maintains elements of McMaster's previous model in that it remains student centred and problem based, but the new model represents a stronger commitment to the scientific component.

The Faculty of Nursing at the University of Toronto is also involved in curriculum re-evaluation, although a new curriculum has not yet emerged. The Faculty of Medicine at the University of Toronto has begun a process of curriculum renewal that is intended to emphasize a problem-based approach to learning.

The Dalhousie University nursing school is reconsidering its curricular model, although no explicit redirection has yet emerged. The medical school at Dalhousie is also moving toward a problem-based format, which they expect to initiate with the first-year class in the fall of 1992.

University Level

At least one university, Université Laval, is involved in significant curricular change across professional schools. The Groupe de recherche multidisciplinaire féministe, which has been in existence for some time, has explored and proposed the creation of a program of feminist studies for the university that will integrate across different professions. Of the target professions for this study, law, nursing, and social work will be involved. Other disciplines will include accounting, anthropology, architecture, biology, chemistry, counselling, dentistry, didactics, history, information and communication, industrial relations, literature, management, political science, psychology, and sociology. Formal approval is expected to initiate this master's-level program of study in the fall of 1992.

Professional Level

At the level of the profession as a whole (across universities), two professions are currently involved in curricular reconsideration. The first is law, as seen in the work of the Special Advisory Committee to the Canadian Association of Law Teachers and the Feminist Socio-Legal Network. The first group has recently published *Equality in Legal Education — Sharing a Vision, Creating the Pathways* (June 1991); the second has compiled course descriptions and materials in the areas of sociology of the law, and women in relation to the law and the state, called *Teaching Law and Society from Feminist Perspectives* (May 1991).

The Canadian Association of Schools of Social Work and the Canadian Association of Social Workers jointly sponsored a study funded by Health and Welfare Canada on continuing professional education for social workers. The project reports of this study were received in March 1990, but due to a change in the designated leadership in these organizations, the results and recommendations have not yet been examined for potential policy recommendations or implementation.

Sources of Curriculum Control

Universities have little or no impact on the curriculum across the professions. Schools of nursing tend to exercise a "corporate"-level overview and discipline on all courses and therefore on all faculty. There are various devices within faculties of nursing to accomplish these ends. Nursing curricula have a formally developed and articulated "Model(s) of Nursing Practice" from which the entire curriculum is derived. The derivation of curriculum into courses and learning experiences is always done collectively with the involvement of most, if not all, faculty members. Although time-consuming, participative involvement allows all faculty members to learn about the interrelationships among courses, the knowledge and skill sets each course is responsible for, and the range of teaching and learning devices to be used in each course. As a result, nursing has a faculty that is well informed about the entire curriculum and the place of each member's course in the curriculum.

Faculties of law, in contrast, are quite disjointed, and faculty members are vague about the structure of the curriculum. They cannot articulate any shared statement of curricular goals, and there is no centralized accountability for the content of any course. The high value placed on individual faculty autonomy in law schools is extensive, and faculty members responsible for different sections of the same course may or may not communicate about the structure and content of their section. Therefore, a student assigned to section A may experience an entirely different course than a student assigned to section B, even though the course title is identical. This pattern is not restricted to optional courses, but occurs regularly in each of the law schools examined, even in required first-year undergraduate courses.

Faculties of social work exercise curriculum control rather like faculties of law. In general, they value individual faculty autonomy, and therefore allow individual members to make changes in courses at that level without much structured review or reintegration. The exception is the social work faculty at the University of British Columbia, which is currently engaged in a centralized curriculum re-planning exercise.

Faculties of medicine control their courses by discipline department. Thus, the discipline of biochemistry will have a clear overview of all biochemistry courses, and will endeavour to hold faculty accountable for coverage of certain assigned areas. It is rare in faculties of medicine, however, to have an integration across disciplines. Thus, course directors for undergraduate or post-graduate education tend more to administrative logistics than to curriculum overview and integration. The exception occurs when medical schools have adopted an integrated curriculum structure such as the problem-based teaching/learning method originated at McMaster, due to be implemented at Dalhousie in fall 1992, and under study at the University of Toronto Faculty of Medicine.

Another central issue in curriculum control is the depth of education and training experience. The measure used in this study for this variable was the cognitive taxonomy developed by Bloom (Appendix 5). The data for this analysis came from the faculty interview responses to questions 5 and 6 on the Faculty Interview Protocol (Appendix 2), augmented by the descriptions in the course syllabi if they were available. In most courses, the desired outcome for students was that they comprehend a range of particular concepts or procedures. This cognitive level (Level 2: comprehension) is the second lowest level of cognitive objective, somewhat more cognitively demanding than knowledge (Level 1) and somewhat less demanding than application (Level 3). In the professional schools having a clinical component (medicine, nursing, and social work), the clinical courses all had a skills requirement, but the skills expectations were generally defined at Level 3, the most simple application level. The bulk of ancillary or supportive material was text based, in casebooks, in textbooks, or in selected or suggested readings. The primary format of education was the lecture, sometimes described as a "lecture/discussion." Courses with formats described as "seminars" might or might not be primarily teacher oriented and composed of "mini-lectures." There was little organized follow-up to any particular course, with the exception of the schools of nursing, which tended to have carefully structured course sequences. Another general exception was that professional schools requiring a clinical exposure (medicine, nursing, and social work) invariably structured a didactic course preceding or contiguous with the related clinical practice course.

These limited choices of teaching/learning formats were well correlated with the type of objectives or outcomes stated for the reviewed courses. Appendix 6 outlines an optimal match between teaching/learning methods and stated purposes, outcomes, or objectives for professional school

courses. The modest objectives of "comprehension" can be accomplished reasonably well with the lecture and discussion teaching/learning format.

The primary method for evaluating mastery was written examination, and most common among examination types was multiple choice. Appendix 7 displays a matrix indicating the optimal match between intended objectives, outcomes or purposes, and evaluation mechanisms. A review of this chart indicates that the multiple choice question is a reasonable choice for objectives at the level of knowledge and comprehension, but for little else from the list of desired professional competence or skills.

Examinations asking for problem solutions or short essays were often featured in law schools; these are rather like the "Cambridge cases" mentioned in Appendix 7. This type of assessment method is particularly useful to indicate adequacy of data gathering, detection of critical problem features, and concise statement of those features in relation to the problem.

Analytic, open-ended papers describing small research projects or cases or integrating across readings and references were common in schools of social work and in upper-level courses in law schools. Evaluation mechanisms of this type provide an optimum assessment of data gathering and analysis, and the clarity of presentation and argument. These components as a group refer to the "analysis" level of cognitive engagement. No course reviewed contained a clear statement of criteria for acceptable levels of analysis to be demonstrated. In general, the criteria for acceptable papers of any kind were unstated and therefore communicated to students only indirectly, if at all.

Clinical performance (application) was evaluated by direct supervisory observation in the three professions that contained a clinical component. Usually, this evaluation was at the pass or fail level, recognizing the standardization difficulty and unreliability of observational ratings between raters. No school examined had developed clear criteria for behaviour that would be rated as acceptable or not.

Curricular Value Sources

The value sources for the professional curricula varied by discipline rather than by university. The value base for the faculties of law was in the traditional place of a body of laws as a social regulatory mechanism. This value base was clear and perceivable in all faculties of law, even among individual faculty members actively engaged in widening the current legal perspective on law as social control. In each faculty of law, individual professors were interested in or espoused values of feminism, pluralism, and equality, and favoured extending these values to a range of society members they felt were not well served by the current traditional value perspective of the law and legal education. The perspective, social place, and expectations of the following groups are frequently referred to in these equality discussions: Aboriginal people, racial or ethnic minorities,

disabled persons, gays and lesbians, and members of religious or linguistic minorities.

In medicine, the value source is the discovery and exploitation of laws and rules of science to improve the condition of humankind. Another highly respected value is the individual judgment of practitioners engaged in physician-client consultation.

In nursing, a shift of values is occurring. Traditionally, the primary value was to "provide care" to clients individually and within their natural supportive context. Increasingly, the values of science, scientific methods, and application of science are being incorporated into the value structure. These sciences in nursing tend to be in part medically based (anatomy, physiology, biochemistry), but there is also a newly emerging "science of nursing" within which can be perceived strands of the more traditional disciplines of education, psychology, sociology, and biology.

In the profession of social work, the most often encountered value is empowerment of individual clients and groups of clients. This value can be perceived in the social work curricula that help students understand societal structures that provide and support social welfare, and in series of practica that develop their skills to enable their clients to have better access to, and to use, these social welfare support systems.

Conclusions

Target Topic Coverage by Professional School

Displayed in Table 1 is a summary of the data provided in Appendix 4, which provides the detailed curriculum description for each professional school in each university. This summary table is organized to present the course numbers at undergraduate, post-graduate, and continuing education levels of professional training in each of the four target professions (law, medicine, nursing, and social work). Coverage in each of the eight studied universities is also provided. These summarized course numbers are divided into courses that include the general area of women's health and those that specifically cover topics in the new reproductive technologies (e.g., genetic screening, surrogacy, *in vitro* fertilization, infertility causes and treatments). Thus, the interpretation of the first line in Table 1 is: at the University of British Columbia, the Faculty of Law has 12 undergraduate courses that touch on the general area of women, 2 continuing education courses in this general area, 2 undergraduate courses that deal with the new reproductive technologies specifically, and 1 continuing education course that does the same; this totals 17 courses that included target topics during the 1991-92 academic year.

Table 1. Target Topic Coverage by University and Faculty

University/ faculty	General issues concerning women			New reproductive technologies			Total
	UG*	PG**	CE+	UG	PG	CE	
British Columbia							
Law	12	—	2	2	—	1	17
Medicine	3	2	many	2	5	3	15
Nursing	2	—	2	1	1	1	7
Social work	2	2	—	—	—	—	4
Totals	19	4	4	5	6	5	
Calgary							
Law	4	—	—	2	—	—	6
Medicine	2	2	many	3	2	6	15
Nursing	5	4	1	3	—	—	13
Social work	5	—	—	—	—	—	5
Totals	16	6	1	8	2	6	
Dalhousie							
Law	1	—	—	1	—	—	2
Medicine	2	1	many	5	2	2	12
Nursing	2	6	—	—	—	—	8
Social work	1	—	—	—	—	—	1
Totals	6	7	—	6	2	2	
Laval							
Law	5	—	—	—	1	—	6
Medicine	—	1	—	3	—	—	4
Nursing	—	—	—	2	—	—	2
Social work	4	—	—	—	—	—	4
Totals	9	1	—	5	1	—	
McGill							
Law	12	—	—	—	—	—	12
Medicine	4	2	many	2	2	3	13
Nursing	4	1	—	1	—	—	6
Social work	5	—	—	—	—	—	5
Totals	25	3	—	3	2	3	
McMaster							
Law ¹	—	—	—	—	—	—	—
Medicine	8	3	many	3	1	5	20
Nursing	4	—	—	—	—	—	4
Social work	2	—	—	1	—	—	3
Totals	14	3	—	4	1	5	

Table 1. (cont'd)

University/ faculty	General issues concerning women			New reproductive technologies			Total
	UG*	PG**	CE ⁺	UG	PG	CE	
Saskatchewan							
Law	4	3	—	2	—	—	9
Medicine	6	1	—	1	1	—	9
Nursing	4	—	—	1	—	1	6
Social work ²	—	—	—	—	—	—	—
Totals	14	4	—	4	1	1	
Toronto							
Law	5	—	—	3	—	—	8
Medicine	1	2	many	5	—	20	28
Nursing	7	—	—	—	—	—	7
Social work ³	—	3	3	—	—	—	6
Totals	13	5	3	8	—	20	
Totals	116	33	8	43	15	42	257

* UG — Undergraduate

** PG — Post-graduate

+ CE — Continuing education — in addition to these courses, all medical faculties offered numerous continuing education courses in areas that touched on women's health in general.

Notes:

1. Law is not offered at McMaster.

2. Social work is not offered at Saskatchewan.

3. No bachelor's-level program in social work is available at Toronto.

The obvious conclusion from this summarized information by professional school is that there is significant variation in target topic coverage between universities within one professional school. For example, the Faculty of Law at the University of British Columbia offers 17 courses that include target topics, whereas the Faculty of Law at Calgary offers 6 and the Dalhousie Faculty of Law offers 2. Variation exists by professional school across the medical faculties as well. The University of Toronto offers the most targeted courses (28); Université Laval offers only 4. The faculties of nursing also vary considerably; the nursing faculty at Calgary offers the most (13), Université Laval the least (2). In social work, Toronto offers the most (5), Dalhousie the least (1).

It should be remembered that these summary numbers are underestimates in several dimensions. First, all of the medical faculties

offer numerous continuing education courses in a range of areas that touch on women's health. There were too many to describe fully in the curricular descriptive grids (Appendix 4). Only continuing medical education courses dealing specifically with new reproductive technologies were described in detail and therefore can be specifically counted in this summary.

Another source of underestimation of coverage in women's general health occurs in the nursing faculties where the topic is generally subsumed in a series of courses dealing with life cycle issues. For example, most nursing faculties have a series of courses divided into paediatric nursing, nursing of adolescents, and nursing of adults. None of these general nursing courses was counted in the curriculum grids or is summarized in Table 1. Similarly, this effect may underestimate the coverage of general women's issues in the schools of social work. Most social work students are women, as are most social work professionals. Therefore, almost all of the basic social work courses, and particularly the practica, include women's issues.

With the exception of the profession of medicine, the schools in each university vary as to whether they provide professional training at all levels: undergraduate, post-graduate, and continuing education. For example, the social work school at the University of Toronto provides no undergraduate training and no continuing education. The nursing faculty at the University of Saskatchewan provides no graduate-level training but does provide undergraduate and continuing education. None of the law schools provides continuing education and, with the exception of British Columbia, continuing legal education has not dealt with the general issues concerning women or new reproductive technologies specifically.

Target Topic Coverage by University (Across Faculties)

Displayed in Table 2 is a second summary of the data provided in Appendix 4, the detailed curricular descriptions. This summary groups the courses that touch on target topics of interest to the Commission by university across the four professional schools in that university. The level of training (undergraduate, post-graduate, or continuing education) is displayed, as is the specificity of the coverage (general women's issues versus new reproductive technologies specifically). The interpretation of the first line in Table 2 is as follows: the University of British Columbia has 19 undergraduate courses, 4 post-graduate courses, and 4 continuing education courses that deal with general women's issues across the four professional schools studied. Also, there are 5 undergraduate courses, 6 post-graduate courses, and 5 continuing education courses that deal specifically with new reproductive technologies. A total of 43 separate courses are offered across the four professional schools that include target topics of interest to the Commission.

This summary displays significant differences across the universities. For example, the universities of Toronto and British Columbia offer twice

as many courses on target topics in these four professional schools as the universities of Dalhousie and Saskatchewan, and three times as many as Université Laval.

It should be remembered that there was systematic under-reporting by professional schools. Also, the size differential across the eight universities could have an effect. The universities of Toronto and British Columbia are three times larger than Université Laval and at least twice as large as the University of Saskatchewan. Therefore, the differential in target topic coverage by university may be more indicative of faculty size than of faculty interest.

Table 2. Target Topic Coverage by University

University	General issues concerning women			New reproductive technologies			Total
	UG*	PG**	CE*	UG	PG	CE	
British Columbia	19	4	4	5	6	5	43
Calgary	16	6	1	8	2	6	39
Dalhousie	6	7	—	6	2	2	23
Laval	9	1	—	5	1	—	16
McGill	25	3	—	3	2	3	36
McMaster ¹	14	3	—	4	1	5	27
Saskatchewan ²	14	4	—	4	1	1	24
Toronto ³	13	5	3	8	—	20	49
Totals	116	33	8	43	15	42	257

* UG — Undergraduate

** PG — Post-graduate

* CE — Continuing education — in addition to these courses, all medical faculties offered numerous continuing education courses in areas that touched on women's health in general.

Notes:

1. Law is not offered at McMaster.
2. Social work is not offered at Saskatchewan.
3. No bachelor's-level program in social work is available at Toronto.

Target Topic Coverage by Profession (Across Universities)

Table 3 summarizes the data from the complete tables available in Appendix 4 that display the detailed curriculum descriptions; the table shows the number of courses with target topic coverage across the eight universities for each of the four studied professions. These data are

displayed by training level (undergraduate, post-graduate, and continuing education) and the depth of coverage (general issues concerning women, and new reproductive technologies specifically). Interpretation of this table for the first line is: across the studied law faculties there are 43 undergraduate courses, 3 post-graduate courses, and 2 continuing education courses that touch on general issues concerning women. There are also 10 undergraduate courses, 1 post-graduate course, and 1 continuing education course that include new reproductive technologies specifically. In total, 60 professional courses are offered in the seven studied law schools (McMaster has no law school) that deal with target topics of interest to the Commission.

This table highlights predictable and unpredictable findings. The faculties of medicine contribute collectively the most courses (45%) at both general (23%) and specific (76%) training levels. Law provides 60 courses in total (23%), although 48 are at the general level. Nursing offers 53 courses (21%), but again, 42 are at the general level. Social work has a total of 28 professional courses (11%), 27 of which are at the general level.

Table 3. Target Topic Coverage by Profession

Profession	General issues concerning women				New reproductive technologies				Total
	UG*	PG**	CE*	Sub-total	UG	PG	CE	Sub-total	
Law ¹	43	3	2	48	10	1	1	12	60
Medicine	26	14	many	40	24	13	39	76	116
Nursing	28	11	3	42	8	1	2	11	53
Social work ^{2,3}	19	5	3	27	1	—	—	1	28
Total by training level	116	33	8	175	43	15	42	100	257

* UG — Undergraduate

** PG — Post-graduate

+ CE — Continuing education — in addition to these courses, all medical faculties offered numerous continuing education courses in areas that touched on women's health in general.

Notes:

1. Law is not offered at McMaster.
2. Social work is not offered at Saskatchewan.
3. No bachelor's-level program in social work is available at Toronto.

General Conclusions About Professional Entry-Level Preparation in Target Topics

Reference to the column totals by training level (undergraduate, post-graduate, and continuing education) in Tables 1, 2, and 3 provides an overview of training available at the professional entry level in the four studied professions across the eight universities examined. For the Faculty of Law, for example, a total of 53 undergraduate courses are available across the eight universities, 10 of which deal specifically with new reproductive technologies. Fourteen of these courses are offered by the Faculty of Law at British Columbia, 12 at McGill (although information from here is incomplete), 8 at the University of Toronto, 6 by the Faculty of Law at the University of Calgary, 6 at the University of Saskatchewan, 5 at Université Laval, and 2 at Dalhousie University. This information should be useful to faculty members interested in sharing course syllabi, evaluation devices, and other instructional information. The detailed information in Appendix 4 will be of immediate use to individuals and groups wishing to identify faculty members interested in general issues concerning women or new reproductive technologies specifically, and who are experienced at one or another of the training levels. For example, faculty experienced in teaching courses that touch specifically on new reproductive technologies at the undergraduate level in faculties of medicine could be invited to a curricular workshop. The first group of participants could be augmented by identifying those with post-graduate or continuing education experience in the same area.

General conclusions about professional entry-level preparation in target topics indicate that each profession at each of the schools contains at least some coverage of the target topics. Individual faculties vary considerably in the extent of this coverage both across training levels and in terms of depth specificity.

General Conclusions About Continuing Professional Education in Target Topics

The continuing education columns in Tables 1, 2, and 3 indicate a general lack of continuing education in faculties other than medicine. In medicine, the coverage of general issues concerning women is extensive at all eight medical schools. There is considerable variation of the coverage across medical schools in the specific areas of new reproductive technologies. The University of Toronto has offered 20 continuing education courses in the last two years that specifically include new reproductive technologies, but the University of Saskatchewan and Université Laval have offered none. The remaining five medical schools offered moderate numbers (6 at Calgary, 5 at McMaster, 3 at McGill, 3 at British Columbia, 2 at Dalhousie).

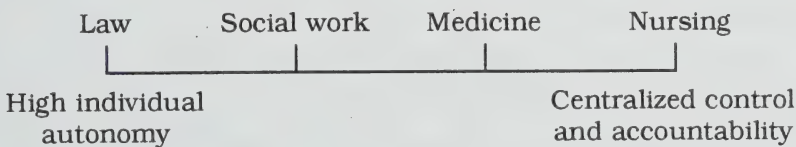
Observed Curricular Patterns

No similarity was perceivable among professional schools within a university, except maybe at the Health Sciences Building at McMaster University, which houses the faculties of medicine and nursing. The two faculties were established with a particular curriculum paradigm (problem based and student centred) that persists to this day. However, McMaster's social work program does not organize its curriculum in this manner, and does not share the same curricular values of using a problem-based format to organize the transition between theoretical learning and practical application.

The effect of a particular university centre on the professional curricula within that centre is almost non-existent in all universities examined.

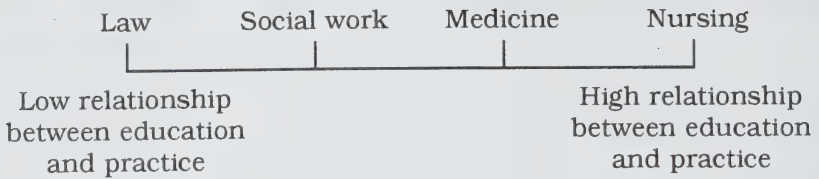
Mechanisms of Curricular Control

The four professions studied vary consistently and significantly in the control mechanisms they employ over their curricula. The professional schools in each of the eight universities can be arranged on the same continuum between maximal individual faculty autonomy and centralized curriculum control and faculty accountability to that centralized control. This continuum matches the degree of collegiality and shared curriculum goals in that professional faculty. Autonomy for faculty members is associated with low faculty collegiality and low levels of articulated and shared curricular goals. These continua were observed at both undergraduate and post-graduate levels in each of the professions across the eight universities. The observed continua can be best displayed by the figure below:



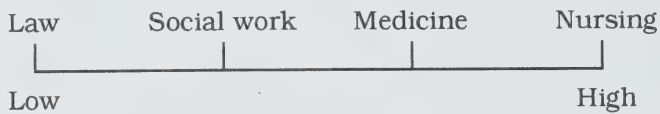
Relationship Between Teaching and Practice

The relationship between teaching and practice is another variable along which the professions consistently differed across the universities. Nursing faculty members, for example, usually spend a significant percentage of their time in active practice and actively supervising students early in their professional practice. In contrast, not only do law faculties not practise law, but they value the perspective on their subject that the distance from practice gives them. Law faculties do not necessarily value practice experience for their members; nursing faculties do. The schools of social work tend to be more like schools of law; schools of medicine tend to be more like schools of nursing.



Relationship of Scholarship and Practice

Scholarship is the work faculty members undertake other than teaching. Included in scholarship are research and writing, and service to various communities, including the faculty, the university, the local municipality, and provincial and federal levels of government. The four professions studied consistently differed on the utility of faculty scholarship from the perspective of practitioners of that profession or learners of that profession. Again, nursing tends to have a close relationship between faculty scholarship and the application of results of that scholarship by learners and practitioners, whereas law faculties do not. The faculties of medicine tend to be more like those of nursing and faculties of social work more like faculties of law.



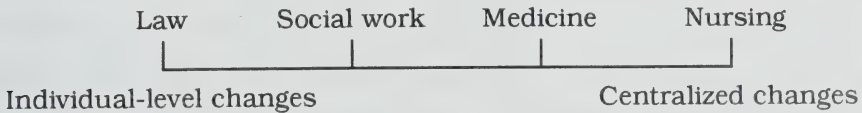
Process of Curricular Change

One of the most productive questions from the Faculty Interview Protocol (Appendix 2) was the series of questions (numbers 2, 3, and 4) that inquired about the mechanism and timing of significant changes made in the particular course. Significant differences in the pattern of these responses emerged between professions that were consistent across universities, and paralleled the results described earlier regarding the degree of faculty member autonomy versus centralized curriculum control and faculty accountability for curriculum.

Nursing faculties tend to make changes in their courses all at the same time, after a centralized reconsideration of the entire structure of the curriculum. In contrast, law faculties invariably make changes in individual courses only when the responsible faculty member changes or makes an individual decision to make a change in the course. The individual-level decisions are not reviewed or vetted by any curricular overview body in the faculty or even by other professors teaching identical or similar courses, prerequisites, or courses that might follow in a curriculum sequence. Therefore, curricular change in law faculties tends to be piecemeal and discontinuous. As a consequence, faculties of law have difficulty discussing the general nature of their curriculum, the general

objective for the curriculum as a whole, the general direction of curricular growth, or any other cross-curriculum issue. Nursing faculty members, on the other hand, regardless of the university setting, have a detailed understanding of how the course they are responsible for fits into a general curriculum plan, with whom they have to confer to make even minor changes in the course, and what the criteria are for judging their individual course or the curriculum as a whole.

Faculties of social work generally follow the law school models, with the exception of the University of British Columbia, which is currently engaged in a centrally managed and integrated curriculum change. Faculties of medicine tend to be much larger than the other faculties studied. Medical schools have considerable difficulty integrating any curriculum, particularly if they were built on the traditional model separating lecture-based basic sciences and clinical applied learning, the latter being conducted on an apprenticeship model in hospital settings. Some schools of medicine are currently engaged in centrally managed curriculum integration efforts focussed on changing the fundamental paradigm of medical education. McMaster University medical school was designed in this manner; Dalhousie will implement its first centrally organized curriculum in the fall of 1992, and the University of Toronto is currently studying options to make the same transition.



Implications

The primary implication of this project for the purposes of the Commission is to highlight the need to differentiate among audiences for Commission results. Should the Commission, for example, wish to make recommendations about professional training, competence, or maintenance of competence, then the language, structure, and mechanism for making these recommendations must be systematically constructed for each of the four professions studied here. Recommendations made to the profession of law as a whole are likely to be ineffective, whereas they could be effective if addressed to the profession of nursing as a whole. The nursing profession has a strong nationalized central body both for practitioners (the Canadian Nurses Association) and for the faculties of nursing (the Canadian Association of University Schools of Nursing). These bodies could be effective in receiving, studying, and implementing recommendations throughout the faculties of nursing and through the continuing nursing education program.

To reach the faculties of law, however, centralized national bodies will not likely be effective because they do not have the integrative power

necessary. More effective would be a series of workshops to which were invited carefully selected faculty members who could be induced to make targeted changes in their individual courses. The maintenance of competence in practising lawyers, however, would have to be approached province by province, through the independent law societies. Even here, the lack of organized curriculum planning will likely frustrate any organized effort to improve the competence or attitude levels of practising lawyers.

To be effective, Commission recommendations addressed to the faculties of social work should follow the model suggested above for faculties of law. The centralized national bodies in social work (the Canadian Association of Social Workers and the Canadian Association of Schools of Social Work) are currently reorganizing and have little integrative power.

Recommendations addressed to the profession of medicine should be addressed on a discipline basis to be effective. Recommendations should be addressed, for example, to the Society of Obstetricians and Gynaecologists of Canada, which does have effective mechanisms of reaching the obstetrics and gynaecology faculty in each school, which in turn can effect change in the discipline in undergraduate, post-graduate, and continuing education areas. Similarly, representation should be made to the College of Family Physicians of Canada and the Canadian Paediatric Society.

In drafting recommendations of this type, care should be taken to use as much professionally relevant terminology and structural reference as possible. For example, to the nursing profession, recommendations must be couched in an explicable "model of nursing."

Appendix 1. Literature Review

Introduction

This section reviews published and unpublished material on health human resources relevant to new reproductive technologies, and includes valid and useful comments of the reviewer. A related section, summarizing the main issues of selected reviews of nursing resources literature, can be found in the archives of the Royal Commission on New Reproductive Technologies.

Health human resources planning and policies have received great attention during the past five years. As concerns have increased about rising health care costs and our ability to fund the health care system adequately, provincial governments and federal parliamentary committees have conducted reviews of the system.

The recommendations stemming from these studies present a broad range of policy directions that will affect human resources planning.

Among them are recommendations that suggest a more efficient and cost-effective use be made of nursing staff and other health care professionals in the health care system. An expanded role is suggested for nurses and their involvement in planning and management of all services, programs, and facilities. There is encouragement for more interdisciplinary approaches to the delivery of primary health care and the need to accommodate additional occupational groups in the institutional setting — groups such as midwives. The studies also stress the importance of necessary provincial legislation to facilitate the suggested realignment within the system (Angus 1991; Nova Scotia, Royal Commission 1989; Canada, House of Commons 1991).

Other studies have placed health human resources planning and policies in a much broader role than it has traditionally occupied in Canada. These studies and reports argue that health human resources planning is an integral part of the organization and method of health care delivery, and therefore cannot be treated as if it is exogenous to the system (Adams and Wood 1990; Barer and Stoddart 1991; Canadian Medical Association 1989).

The health care system is a major employer in Canada. In 1988, approximately 7 percent of the total Canadian labour force was employed in the sector. The health care system remains the major employer in many communities. The labour force comprises physicians, nurses, nursing assistants, occupational therapists, physiotherapists, audiologists, dentists, dental hygienists, laboratory technologists, pharmacists, radiation technologists, chiropractors, other health care professionals, and a broad range of support workers without whom the system could not function.

As the importance of health human resources policies and planning to the redirection of the health care system has received greater support, issues relating to the role of provincial and federal governments, professional associations, professional licensing authorities, and education and training systems are receiving increasing attention. Policies that address the broad range of issues are being examined for evidence of success or failure. The predisposing conditions are being sought, and resources are being devoted by governmental and non-governmental agencies to addressing various aspects of the issues. The experiences of other countries are being sought as input into the policy formulation and decision-making process of health human resources policy issues (Barer and Stoddart 1991; Price Waterhouse 1990).

An important element in addressing issues of new reproductive technologies is an understanding of the issues, trends, and policies of health human resources. The provision of services in new reproductive technology will depend partly on the type, number, and organization of health human resources in the system and their role in the delivery of care, ranging from health promotion and disease prevention to zygote intrafallopian transfer and tubal embryo transfer.

Adjustments to health human resources — increases, decreases, training of new specialists, continuing training, retraining — will be affected not only by the policies put forward by governments but also by the positions taken by health care provider organizations.

This review examines selected literature that incorporates the central themes, concerns, and approaches to health human resources planning and policy directions in Canada.

Methodology

A MEDLINE search identified health human resources studies published between 1985 and 1991. The professions of nursing and medicine were selected. Relevant studies concerning health human resources policies in the United States, the United Kingdom, Belgium, Sweden, and Germany were identified, and some were subsequently reviewed.

In addition, several organizations and individuals representing health provider groups were contacted and asked to provide direction or references to unpublished material on health human resources issues in their areas of expertise. These organizations included the Royal College of Physicians and Surgeons of Canada (RCPSC), the Society of Obstetricians and Gynaecologists of Canada, Health and Welfare Canada, and the Canadian College of Medical Geneticists. The author's experience has also made him aware of unpublished reports and studies.

Studies were chosen that dealt with either policy issues or trends, rather than particular aspects of a specific medical or nursing practice.

Forty-seven studies that provide an overview of the many issues concerning nursing and medical human resources policies were selected. A description of each study, identifying the researchers or authors, the audience, issues, and conclusions, is held in the archives of the Commission.

This report provides a synthesis of the literature and discusses the general trends in health human resources planning in Canada. The report addresses nursing and medical resources separately.

Health Human Resources in Nursing

During the past five years the shortage of nurses has been a dominant theme across Canada (Anderson et al. 1990; Canadian Nurses Association and Canadian Hospital Association 1990; Price Waterhouse 1990). High vacancy levels are said to be a problem, particularly in urban centres and geographically isolated areas, and in the provinces of Quebec, Ontario, Alberta, and British Columbia. Shortages have also been identified in areas of nursing practice regarded as "nursing specialties," such as nursing in intensive care units, in critical care units, and in psychiatric care.

Factors Influencing the Supply of Nurses

Studies suggest that although there has been a total increase in the number of nurses — a 4.4 percent national annual growth rate (Price Waterhouse 1990) — vacancy levels are also increasing.

Ryten (1990) noted that over the last decade fewer people have been qualifying as nurses. In addition, nurses are growing older. In 1989, registered nurses between 35 and 39 years of age accounted for 30 percent more of the nursing population than nurses between 25 and 29 years of age.

One of the factors influencing the supply of nurses is the number of new nurse graduates. In Ontario, concern about a nursing surplus in the 1970s prompted the Ministry of Colleges and Universities to reduce funding and training positions.

Subsequently, the numbers graduating have fluctuated between 1975 and 1989. The number peaked in 1976 when 9 996 nurses graduated, but in 1989 the number had fallen to 8 319. Analysis by Price Waterhouse placed the decline in the number of nursing program graduates at 30 percent between 1976 and 1983.

Declines have also occurred in the enrolment of nurses and subsequent graduates from basic registered nurse programs in the United States and Europe. McKibbin and Boston (1990) noted that between 1983 and 1987 nursing school enrolments in the United States fell by 27 percent and the number of newly licensed graduates declined by 14 percent between 1984-85 and 1986-87.

In the United Kingdom, concern about the need for “specialized nursing services” (e.g., in geriatric and psychiatric care) is coupled with a more general concern that the pool from which nurses are drawn — “learners to basic training” — is declining.

Attrition from the nursing labour force is a key factor in the supply of nurses. In 1989, only 65 percent of registered nurses were employed in nursing (Canada, Statistics Canada 1991). Nurses leave the labour force because of death, retirement, emigration, or a decision not to practise their profession. Studies have shown the retention of nurses is related to a diverse set of factors. The Canadian Nurses Association/Canadian Hospital Association review of studies identified a growing dissatisfaction among nurses that contributes to their departure from the workforce. The contributing factors include:

- inappropriate nursing duties;
- lack of involvement in the administrative, financial, operational, planning, and decision-making processes of the organizations that are part of their environment;
- inflexibility of work schedules;
- lack of educational opportunities;
- inadequate compensation;

- limited autonomy in professional practice; and
- lack of respect from other health care providers.

Other studies conducted in Canada have cited these same factors as contributing to problems in retaining nurses (Angus 1991; Ontario Hospital Association 1989).

McKibbin and Boston (1990) argued that perceived shortages of nursing personnel are not due to nurses choosing employment outside the profession. They suggested that the disequilibrium between supply and vacancy levels is due to an increasing demand for nurses that the training establishment has been unable to meet.

In its brief to the Standing Committee on Health and Welfare, Social Affairs, Seniors and the Status of Women, the Canadian Nurses Association (CNA) is reported to have "noted that, strictly speaking, there is no shortage of nursing resources. The fact that nurses are unwilling to work under the present conditions ... has given the impression that a shortage exists" (Canada, House of Commons 1991, 69). This analysis suggests that there is a pool of trained nurses that can be enticed to enter the labour market if a number of factors change. These factors include economic incentives (Clark 1990), matters of autonomy, decision making, respect from other health professionals, and flexibility in the organization of work (Canadian Nurses Association 1990).

Another factor that has the potential to influence the future rate of growth in nursing supply is the recommendation by the CNA that by the year 2000 a university degree should be the educational minimum standard for entering practice. Reports have placed the proportion of nurses with at least Bachelor of Nursing (B.N.) degrees at 13 percent of the professional population in 1987 and 14 percent in 1989 (Alberta, Premier's Commission on Future Health Care 1988; Ryten 1990).

The output from B.N. programs increased by 57 percent from 1978 to 1988. This growth in upgrading the level of the nursing labour force has fiscal implications for public funds (Anderson et al. 1990). The authors suggested that before a rational plan is developed, the following question must be addressed: What types of nursing personnel and what mix are required to deliver care to meet the nursing needs of the health care system?

The merit of the B.N. as the entry-level degree by the year 2000 has engendered much debate. Employers are concerned about the implications of increased costs and matching the needed work to the qualifications. Within the profession there has been dissatisfaction with this approach. In Ontario the nurses' union, the Ontario Nurses Association, withdrew its membership from the Registered Nurses Association of Ontario (RNAO) over disagreement about the need for the B.N. at the entry level.

Concerning future supply requirements, Ryten (1990) suggested that between 9 000 and 10 000 B.N. graduates a year will be required to keep pace with recent output levels from all current paths. The ability of the

Canadian schools of nursing to increase capacity to meet this demand and the availability of qualified candidates for this initiative are central to the success of the objective.

The Price Waterhouse report cautioned that "unless major delivery system reorganization is anticipated, preparing all registered nurses at the BN level could result in further disenchantment and more alienation from work" (Price Waterhouse 1990, 26). The increase in entry-level requirement is associated with increasing the professional image of the profession, especially in relation to physicians. If B.N. nurses do not have a greater say in management, administrative decisions, and planning, their aspirations will not be met and disenchantment will result. Increased alienation could in turn lead to departures from the profession. There is a possibility, though, that departures could be eased because increased opportunities for career advancement would be commensurate with higher educational attainment.

Factors Influencing the Demand for Nurses

The demand for nurses is influenced by technological innovation, which can be expected to change the tools and techniques nurses use in their jobs and the scope of nursing practice (Canada, Employment and Immigration 1988; British Columbia Health Association and Registered Nurses Association of British Columbia 1988).

As the health care system reorients itself and more emphasis is placed on community health and home care, the role of nurses in the health care system can be expected to expand. Increasing non-traditional delivery methods such as midwifery may increase the demand for nursing personnel in Canada. Pressures to provide less expensive and more effective and efficient care will also provide opportunities for non-physicians to expand their roles in the system.

The policy thrust toward health promotion and disease prevention is partly predicated on an expanded role for nurses and a greater involvement of consumers in decisions about their own health. A greater role for nursing in the management and decision-making process is also expected to contribute to an increased demand for nurses of different types.

The complexity of technology and the associated education and skills required are driving the demand for nurses with special training to work in areas such as the critical care unit. The need for nurses to have special training and to be recognized for it was identified by the Premier's Commission on Future Health Care of Albertans (1989).

The Commission discussed the use of a certification process, supporting the implementation of a national CNA program. In a similar vein, the Minister's Advisory Committee on Reproductive Care in Ontario supported initiatives at McMaster and the University of Toronto toward the development of master's level nursing specialists in obstetrics and perinatology. The Committee also recommended that funds be made available for elective courses in embryology, neonatal pathology, clinical

nutrition, and other related areas supporting perinatal specialty programs. Both the Ontario and Alberta groups supported the need for continuing education programs that would provide an opportunity for nurses to upgrade their education and skills.

This indicates a growing consensus for a certification process that ensures standards in education, training, and defined programs for specialized nurses engaged in reproductive care. There still remains, however, confusion in terminology, different levels of training, practice, education, and regulation for the broader group of "nurse specialists."

Trends

The role of nurses in the delivery of health care services in the institutions and in alternative delivery methods (e.g., home care, community health centres) is expected to increase. Recent studies have almost unanimously called for a greater participation of nurses in the decision-making processes that govern their work environments. There is a recognition that shortages of nurses are largely affected by a growing dissatisfaction related to working conditions. The literature has been calling for changes in remuneration, flexibility in work schedules, greater scope for career choice within nursing, and a clarification of roles among nurses, nursing assistants, and other health care workers.

The reports have stressed the need for change in the structure of the health care system to facilitate reasonably paced change. The recently altered Hospital Management Regulation of the Public Hospitals Act in Ontario requires that nurses participate in decision making related to administrative, financial, operational, and planning matters in the hospital.

The need for a strategic approach to nursing requirements is recognized in Canada and other countries. Planning should incorporate the following:

- assumptions about the changing role of nurses and other health care providers;
- the impact of policy directions, such as the requirement of a university degree as the minimum educational standard for entering nursing practice by the year 2000, on the supply of nurses if they are to be implemented; and
- the impact of work-related factors, changes in satisfaction, and general health care organizational change on supply.

The CNA suggests in its brief to the Royal Commission on New Reproductive Technologies that among the changing roles for nurses is a place on multi-sectoral teams in the planning of appropriate and effective strategies for dealing with new reproductive technologies.

Health Human Resources in Medicine

Overview

As in health care systems in other countries, physicians are a central element in the provision of care. They influence the way the health care system is organized and, correspondingly, the cost of health care. It has been argued that physicians influence between 66 percent and 80 percent of health care expenditures (Applegate 1983; Mohan et al. 1980; Komaroff 1983).

Physician resource policies and planning issues have dominated discussion of health human resources in the health care system. Physician supply questions have in turn dominated the policy and research agenda. Physician supply has grown faster than the growth in the general population, at approximately four times the rate of the general population during the past five years. The total Canadian active civilian physician population in 1989 was 51 314. General and family practitioners accounted for 52.9 percent, and specialists 47.1 percent.

The Canadian Post-M.D. Education Registry (CAPER) is an organization jointly funded by five national health care organizations (the Canadian Association of Interns and Residents, the Association of Canadian Medical Colleges, the Royal College of Physicians and Surgeons of Canada, the College of Family Physicians of Canada, the Canadian Medical Association) and Health and Welfare Canada. CAPER produces data that show the number of post-M.D. trainee positions in the country. As of 1 November 1990, there were 7 739 funded positions, 84.3 percent of which were funded by provincial governments. The other 15.7 percent were funded by charitable organizations and foreign governments. Of the 7 739 post-M.D. positions, 83.7 percent were filled by Canadian citizens, 6.2 percent by landed immigrants, and 10.3 percent by residents of other countries in Canada on a student visa.

Enrolment in Canadian faculties of medicine peaked in 1982-83 at 7 492 students. In 1989-90, there were 7 072 people enrolled, the lowest level of the decade — a 5.7 percent reduction since 1982-83. Although falling, the ratio of applicants to available positions remains relatively competitive at one position for every four applicants.

The supply of physicians in Canada is augmented by graduates of foreign medical schools. Immigration policy in Canada is a federal responsibility, but provincial governments are involved in decisions permitting physicians to enter Canada. Historically, we have relied on immigrant physicians to supplement either underserved areas or specialists that are in short supply.

The federal and provincial governments agreed in 1975 to restrict physician immigration. The number of physicians entering as immigrants was reduced; however, physicians identified as refugees were still able to enter the country. From 1962 to 1968, the number of physicians entering Canada averaged 880 per year. This figure grew to an average of 1 072

from 1969 to 1975. After 1975 the number dropped dramatically, averaging 331 per year from 1976 to 1980.

In 1986, 417 physicians entered Canada; 416 entered in 1987. Of these entrants, 140 in 1986 and 144 in 1987 were "selected" physicians, recruited for their particular expertise and for the site in which they practised. Current Canadian immigration policy severely restricts entry of physicians from foreign countries unless they are accepted as refugees or as selected physicians (Canadian Medical Association 1989).

Increasing health care costs and expenditures, coupled with a reduction in the rate of transfer payments in support of health care and post-secondary education, prompted provincial governments to call for an examination of the growth of the supply of physicians. Each provincial task force and royal commission on the health care system has devoted significant portions of its report to medical resources issues.

Medical Resources Issues

Issues in the management of medical resources have been identified in several studies. The most recent, "Toward Integrated Medical Resource Policies for Canada" (Barer and Stoddart 1991), identified issues from the perspective of key stakeholders — namely, governments and medical organizations and related individuals — and from the perspective of the investigators. The key stakeholders identified the following concerns: geographic and specialty distribution, control over graduates of foreign medical schools, rationalization of residency training positions, the role and funding of academic medical centres, and the role of fee-for-service in medical resource policies. These concerns have been identified by other studies and reports over the past five years (Angus 1991; Canadian Medical Association 1989).

The investigators expanded the list of issues to include those that are a result of the way physicians practise or the way in which medical resources are organized. Identified as issues were the provision of care that is ineffective, inappropriate, or inefficient; the lack of uniform standards of clinical competence for licensure; overlapping scopes of capability with other health care providers; and dissatisfaction within the medical profession about the process of fee negotiations.

Other issues such as the growth in specialization have been noted by other studies (Canadian Medical Association 1990; Lamarche 1989; Quinn 1991). Barer and Stoddart (1991) also cited the growth in the supply of physicians at a rate significantly greater than the growth in the general population.

Although recent reports of medical organizations tentatively acknowledge a growing concern with increasing supply, medical organizations have become involved only in limited approaches to constraints of supply. The Joint Working Group on Graduates of Foreign Medical Schools of the Federal/Provincial Advisory Committee on Health Human Resources drew representatives from the federal and provincial

governments and from national medical organizations. As part of its mandate, the Working Group sought ways "to better adjust the number of graduates of foreign medical schools to Canadian resource requirements" (Canada, Federal/Provincial Advisory Committee 1986).

The experience with the increasing supply of physicians and concerns about potential or actual oversupply is varied across the other countries that have been reviewed.

In the United States, studies have projected the supply of physicians to the year 2000 to range from an oversupply of 145 000 physicians to a modest oversupply that can be met within the increasing demand and capacity of the system. Iglehart (1986) reported that the American Medical Association did not acknowledge a surplus of physicians. However, some specialty organizations and the California Medical Association not only expressed their concern that a surplus existed, but also took action to advise other physicians. The California Medical Association advised physicians who wished to set up practice in that state about the potential difficulties.

Belgium and Germany both have a surplus of physicians. In the former Federal Republic of Germany, "all political groups and institutions agree that the forecast numbers exceed by far both the future needs and the financing possibilities of the country" (van den Bussche 1990, 147). Approximately 4.6 percent of the physician population was unemployed in 1988 (Ade and Henke 1991). Despite the recognition of oversupply, no coordinated action has been taken to address the concern or agreement about strategies.

In Belgium, some unemployed physicians have sought unemployment benefits. Deliège (1988) estimated unemployment levels of approximately 1 000 physicians in Belgium, Denmark, Spain, Switzerland, and the Netherlands. She argued that the non-participation rate of physicians in France and Belgium is normally 5 percent; however, the prevailing rate in Belgium is between 12 percent and 24 percent.

Unemployment is not currently a factor in the Canadian health care system. Individual physicians are able in most provinces to set up practice and bill the provincial health insurance plan for each patient they see on a fee-for-service basis. Constraints to employment are the costs associated with setting up a practice and the physicians' ability to attract patients.

In Quebec, there is a slight modification. Physicians earn only 70 percent of the fee schedule in designated urban areas, and between 110 percent and 135 percent in designated rural and remote areas. Physicians may be unemployed, but this is hard to assess.

At present there are no fixed budgets such as those described above for physician services that would result in unemployment of physicians.

Physician supply issues have traditionally been addressed in isolation, independent of other concerns about the organization of the system and the role of medical providers. There is increasing recognition, however, that

policy options and approaches to medical resources issues should not be viewed in isolation, and that policy options are interconnected.

Geographic Maldistribution

Despite increasing numbers of physicians (even to an oversupply in some European jurisdictions), geographic maldistribution continues to be a problem. Klein (1990) identified this issue as substantive, and from cross-national comparisons concluded that

[S]uccess in achieving a better distribution of doctors does not seem to be related to numbers. The overspilling bath theory of effecting a better geographical spread does not work. The U.K. has been reasonably successful, despite low numbers: Israel and Mexico, among others, have been relatively unsuccessful despite high numbers. The same conclusion would seem to apply to the distribution of doctors between specialties: thus the U.K. has been more successful in keeping doctors in primary health care than Sweden, although the latter has far more doctors. This would imply that institutional arrangements, and the structure of incentives, may be more important than the number of doctors. (Klein 1990, 251)

Recent thrusts in Canada run toward the design of broad sets of strategies that include educational experiences, professional support, community participation, and financial incentives. Bursaries and financial incentive programs have long been used across Canada with varying degrees of success (Dupont and Flor 1988).

Barer and Stoddart (1991) suggested that the range of strategies, including the use of graduates of foreign medical schools, continue to be applied to meet specialist shortages. They proposed that this be regarded only as the short-term solution to address specific concerns about maldistribution, and that geographic maldistribution questions should be approached differently. They recommended that instead of thinking about equal geographic distribution of physicians, equitable distribution should be considered. Questions would not be based on having comparable ratios of population to physicians across regions, but rather on reasonable access to necessary clinical services. In the assessment of reasonable access, the appropriate health care provider and the ability of other providers to provide the service should be considered.

In the case of new reproductive technologies, as in other clinical services, it will be important to identify carefully procedures, treatment, and prevention regimes, and to identify practitioners delivering the range of services. Studies designed to provide information on outcomes will assist in the development of guidelines. The determination of what constitutes reasonable access to new reproductive technology services will have to be developed with the many stakeholders, governments, providers, and consumers.

Geographic maldistribution concerns exist in all countries. Care must be taken to ensure that the strategies used to address them are not in conflict with other policies and objectives in the system.

The distribution of specialties has been a chronic problem in Canada. The recruitment of selected physicians from outside the country has traditionally been the key approach to meeting this need. Quebec has had experience with a policy of differential payments for physicians, specialists, and general practitioners. In the first set of incentives "adopted in 1982 and improved in 1984" (Contandriopoulos and Fournier 1991, B-12), all physicians, excluding tertiary care specialists, received 70 percent of the basic benefit schedule rate during their first three years of practice if they settled in designated urban areas. If they chose to work in designated rural or remote areas, they received between 115 percent and 120 percent. Other measures directed specifically toward specialists were adopted in 1986 and 1987.

To date, the measures designed to reduce regional disparities of Quebec specialists have not been successful. Designated residency training positions for specialists in non-urban areas are not being filled, and specialists are choosing to work as general practitioners at 70 percent of the regular rates in urban centres (Contandriopoulos and Fournier 1991, B-12).

Quebec has also taken measures to reverse its general-practitioner-to-specialist mix from 60 percent specialists and 40 percent general practitioners, to 60 percent general practitioners by the year 2000. The ratio is currently equal.

Medicine is becoming increasingly specialized with the growth in new medical technologies and the exponential growth of scientific knowledge. In 1989, the Canadian Medical Association (CMA) expressed concern that the growth in subspecialization was at the expense of the generalist. The association supported the proposition that doctors should be trained for the needs of the communities in which they are needed to work and that generalists have an important role to play in this regard. The CMA called for the development of national guidelines for delivery of subspecialist services.

Barer and Stoddart (1991) found through their interviews that the proliferation of subspecialists and the number of residency programs were identified as issues, but no specific solutions were suggested during the interview process.

No planning links the number of residency programs and new subspecialties to the needs of the population. The demand for new subspecialties is thought to be partly in response to pressures from the United States. The authors suggested that "a forecasting model should be developed nationally which would use detailed data on the characteristics of the existing supply of specialists to project future specialty-specific supply" (Barer and Stoddart 1991). In addition, they suggested that national or regional coordinating bodies, or both, be developed to rationalize, redistribute, and adjust, as necessary, residency training positions and hence specialty ones.

It is important to rationalize specialty training programs. To maintain its attractiveness to potential candidates and for research funds, each medical school would like to have its own subspecialty programs. Unless rationalized, the programs will grow to create viable critical mass at each site to allow for present and future training. Unless planned, growth in these programs will soon outstrip the population growth and most likely the population need.

Planning for Medical Resources

Although all countries reviewed in this paper have used some degree of "planning" for medical resources, only Sweden has an integrative planning approach; it was developed in the 1980s and has a 10-year planning horizon. Sweden's planning process is conducted within its general health policy directions (Calltorp 1990). However, as decentralized decision making increases within the system, the integrative approach is compromised (ibid.; Odegaard 1990).

In the other countries, including Canada, there has been a series of forecasts and projections of physician supply and estimates of requirements. Birch and Maynard (1991) found that the planning process in the United Kingdom does not take into consideration health care policies, the role of other providers, the availability of hospital beds, and other health care delivery variables. These elements must be considered by all groups examining the requirements for physicians in the Canadian health care system. To do otherwise would be to ignore the environment and considerations of appropriateness, effectiveness, and efficiency.

Planning approaches in Canada have usually been closer to those in the United Kingdom than to those in Sweden. Canadian health economists and policy analysts have identified the need for approaches that incorporate policy directions and alternative delivery methods (Denton et al. 1982; Lomas et al. 1985). Recent Canadian reports (Canadian Medical Association 1989; Barer and Stoddart 1991) have called for a strategic approach to physician resource planning. The approach not only would consider health care policies in general, but would be placed within a much broader framework of health human resources planning that incorporates the changing role of other health care providers. The external environment, geographic factors, cultural factors, attitudes and practices of the population, and the impact of new technologies are all other variables that have been suggested as part of a more complete approach to medical resources planning.

Planning Methodologies

The methodologies used in the projection of physician requirements will have an impact on whether a surplus or shortage is projected. The approaches used in Canada have been based primarily on past utilization and existing patterns of delivery. These trends are extrapolated into the future, often adjusted for demographic changes and projected economic conditions. This method tends to implicitly carry with it the present

political structures and decision-making and power bases. The necessity to change this methodology is receiving increasing support (Adams and Wood 1990; Anderson et al. 1990; Klein 1990).

Methodologies that are more closely aligned with the needs of the population are being proposed. The needs-based health human resources planning approach has as its central feature the development of health human resources requirements from a comprehensive analysis of the health care needs of the population. It is important to apply this approach to health human resources planning for all categories of health care providers. The prevalence and the extent of illness in the target population are assessed. This approach requires the measurement of health status deficits, and accurate identification and definition of the populations that are at risk. Anderson et al. (1990) stressed that this approach must also consider the appropriateness of the health care services that will be delivered to manage the identified conditions. It is based on three dimensions: availability, effectiveness, and efficiency. Such a pure needs-based approach will require the collection of significant amounts of data.

Other approaches incorporate some elements of the needs-based model, while using past utilization trends adjusted for appropriateness and effectiveness through the use of expert panels (Adams and Wood 1990). The development of broader planning approaches that are more closely linked to the health care needs of the population are essential for good health human resources planning.

Barer and Stoddart (1991) identified several themes central to health human resources management in Canada. Among other things, they suggested that the optimal number of physicians cannot be defined by purely technical methods; ultimately, it is social judgment, not technical judgment, that will be used. If this fact is not recognized and accepted, there will be unnecessary delays in the development of policy while the parties involved await improvements in data collection or planning methodologies.

Planning for Specialty Requirements

Planning for specialty requirements across health professions is more problematic than trying to assess the total requirements for the health care system. Some medical providers, such as family physicians, geneticists, obstetricians and gynaecologists, and endocrinologists, are involved in the delivery of services crucial to new reproductive technologies. The RCPSC is responsible for establishing training requirements and the subsequent certification of specialists. The introduction of new subspecialties takes many years, and is done through several committees of the college. One of the newest subspecialties is gynaecologic reproductive endocrinology and infertility. This program — a subspecialty of obstetrics and gynaecology — is concerned with disorders of the endocrine system that interfere with reproductive health at any age and other conditions that interfere with the human procreative process. Although the college is responsible for

specialty training requirements and for establishing the specific requirements and guidelines for accreditation of the residency program, the number of physicians required in this new subspecialty cannot be determined by the college alone. This must be part of a plan for subspecialties.

A more sophisticated approach to determining specialty requirements than that of relying on past utilization patterns was used by the Graduate Medical Education National Advisory Committee (GMENAC) study in the United States. The approach developed assumptions about the future role of each specialty in the health care delivery system and, using advisory panels of experts (called Delphi panels), prepared briefing books for each specialty containing all available data on the content of the specialty and the characteristics of the practitioners in that specialty. The Delphi panels met to review the data and to make adjustments or to synthesize new data for use in the model. The GMENAC approach received much support for its advancement of planning methodologies and much criticism from many of the specialty groups about the results of the planning exercise.

In Canada, studies examining physician requirements by specialty have been relatively narrow in focus, based on past utilization trends and projected changes in demography, and adjusted for expectations relating to changing disease patterns. These studies were not able to incorporate health policy issues, alternative delivery providers, or methods of delivering health care services. Nor did the GMENAC study incorporate health policy changes or adequately consider other providers or methods of delivery.

The determination of specialty requirements is dependent on a broad range of variables, including the changing demographics of physicians. For example, the number of women practising medicine is increasing. In 1982, women made up about 14.2 percent of the physician population; this figure had changed to 16.8 percent in 1987. Women now account for about 48 percent of those entering medical school. However, there remain relatively few women in surgical specialties. It is important that the characteristics of the physician population, in practice and in training, be understood in the planning for specialty services. Changing attitudes, changing incentives, and changing practice methods must also be incorporated into the planning process.

Studies conducted in Canada that may have implications for new reproductive technologies have been concerned primarily with the delivery of obstetrical care services. In 1986, R.W. Winter, the chairperson of the human resources committee of the Society of Obstetrics and Gynaecology of Canada, wrote that there was a need to clarify the role of the obstetrician and gynaecologist as both a primary-care physician and a consultant. Identifying three subspecialties in obstetrics and gynaecology — perinatology, oncology, and reproductive endocrinology and infertility — Winter (1986) concluded that it is difficult to make predictions either about medical human resources requirements — due to changing patterns of

practice and the growth of midwifery — or about the level of fees that obstetricians receive.

Medical-legal liability issues may also have a significant impact on the practice of obstetrics and gynaecology in Canada. Other studies have suggested that there is a trend away from the family physician participating in obstetrical care in non-urban settings. This trend is said to be affected by medical-legal issues, patterns of practice, and lifestyle preferences. However, the College of Family Physicians of Canada strongly urges family physicians to continue to participate in reproductive care.

Another example of specialty-specific forecasting was conducted as part of a national specialty review carried out jointly by the Canadian Medical Association and the Royal College of Physicians and Surgeons (Watanabe 1988). The review identified physicians who were working functionally as endocrinologists, as judged by the time they spent in various activities related to the specialty. The individual responses of physicians were assessed by a panel of peers. Program directors from across the country estimated that another 50 specialists were needed to meet current demands in the discipline. Although the process detailed the type of work that defined a physician as working functionally as an endocrinology/metabolism physician and identified current needs, it did not consider questions of appropriateness, efficiency, or effectiveness.

Methods of specialty-specific planning need to be developed and agreed on. No proven method of specialty-specific planning is being done in Canada. It is important that such methodologies be developed to address questions about the need for geneticists, endocrinologists, obstetricians, and other physicians contributing to new reproductive technologies and services. However, these methodologies cannot be developed in isolation by the specialty groups due to the overlapping responsibilities and natural tendencies to protect turf.

A number of medical groups are involved in the provision of services related to new reproductive technologies. General and family practitioners are involved in various aspects of reproductive care — promotion, prevention, counselling, and obstetrical care. As of 31 December 1990 (data purchased by Health and Welfare Canada from Southam Communications Ltd., Scarborough, Ont., April 1991), excluding interns and residents, there were 27 334 general or family medicine physicians in Canada. In the training stream as of 1 November 1990, there were 758 in the non-specialized training categories and 1 392 in post-M.D. family medicine training programs (CAPER annual census of post-M.D. trainees, 1990-91). There were 15 725 clinical specialists, 4 858 of whom were in internal medicine and its subspecialties. A total of 1 318 laboratory specialist physicians were reported to be active as of 31 December 1990. The surgical specialties accounted for 7 388 physicians, 1 640 of whom claimed obstetrics and gynaecology as a specialty. There were 101 medical

scientists, approximately 0.2 percent of the total active civilian physician population of 51 841.

Health and Welfare Canada does not provide a detailed breakdown of medical subspecialties. A functional review conducted under the auspices of the CMA, RCPSC, and the College of Family Physicians of Canada identified the professional activities in which physicians were engaged as of 31 December 1986 (Canadian Medical Association 1990).

The data indicate that of the 22 120 physicians engaged in specialty work, 6.1 percent were in obstetrics and gynaecology, 0.3 percent were in medical genetics, 1.1 percent were in endocrinology and metabolism, and 9 percent were working as anaesthetists. Medical biochemistry and medical microbiology accounted for 0.4 percent and 0.5 percent, respectively, of the functional specialists' pool. A total of 21 334 family and general practice physicians were also identified. The proportions of functional specialists can be applied to the Health and Welfare 1990 stock of physicians to give an indication of the numbers in the subspecialty groups that would be more likely to be delivering services related to new reproductive technologies.

The Canadian College of Medical Geneticists (1990) reported that between 1975 and 1990, 120 individuals were admitted as fellows through examination of credentials or through direct examination. Of the 120, 61 held M.D. degrees, 36 held Ph.D. degrees, 2 held D.Sc. degrees, and 21 held both M.D. and Ph.D. degrees. As of 1 November 1990, there were 39 post-M.D. training positions in endocrinology and metabolism; 31 were in the fourth or fifth years of residency training and 7 were working as fellows. There were 5 trainees in medical genetics. In 1990, 284 trainees were in obstetrics and gynaecology, 13 of whom were fellows. In the new subspecialties of maternal and fetal medicine, there were 2 trainees in the fifth year of residency training. In gynaecologic reproductive endocrinology and infertility, 1 trainee was in the fifth year of residency training. The literature does not provide information about the number of physicians who would be required in these new subspecialties.

During the 1985-86 academic year, Ryten (1986) conducted a study of the career goals of Canadian medical students. The results of the survey showed that of the 70 percent of the 3 733 medical students who reported they were interested in a specialty career, 2.9 percent expressed interest in a career in endocrinology, 1 percent in a career in genetics, and 6.1 percent in a career in obstetrics and gynaecology.

The number of practitioners in fields related to new reproductive technologies can be estimated by taking data on the number of active civilian physicians and adjusting, using the proportions of those practising in the related fields derived from the Canadian Medical Association (1990) study. A career goals study (Ryten 1986) indicated that the expression of career interests seemed to be consistent with the number of trainees in the particular specialty group. Assessing the requirements for physicians in new reproductive technology-related activities will require the development

of appropriate methodologies that involve specialty and subspecialty groups.

Conclusions

The Canadian health care system, like others, is undergoing intensive review. Increasing health care costs, growth in new technology and knowledge, and a greater awareness of the many factors that affect the health of Canadians contribute to pressures for change. Effectiveness and efficiency, appropriate care, consumer participation in decision making, and ethical decision making are just some of the terms that characterize the changing nature of our health care system.

The premise that health human resources planning should be integrated into general health care policy development is receiving greater recognition. In their study of medical resource policies for Canada, Barer and Stoddart (1991) stressed the complex interdependence of policies in this area. Their review was consultative and acknowledged that change in the health care sector is dependent not only on government initiatives, but also on support from the other key stakeholders. Health human resources planning must consider and define appropriate roles for all health care providers. The overlap between the extended role of nurses and general and family practitioners in such areas of reproductive care as promotion, prevention, counselling, and obstetric care must be addressed. Traditional power positions cannot be allowed to dictate the direction of health human resources planning. Changing the culture and approach requires a change in the questions asked. Rather than asking how many health care professionals are needed, the trends indicated by the literature ask "What are the appropriate services that should be delivered?"

For new reproductive technologies, decisions must be made about the range of services that will be offered by our health care delivery system. The effectiveness of the services must be assessed and the appropriate providers matched to the services to be delivered.

Determining the number and types of health care professionals that will be required to provide new reproductive technology services can be achieved only with the participation of the government, health care providers, their organizations, certifying and regulatory bodies, and educational institutions.

New reproductive technology services are a subset of total health care services. Some health care providers who deliver new reproductive technology services also deliver other services.

Planning for health human resources in this area must therefore be integrated, and must consider the needs of the whole health care delivery system. It should take into account the need within the population for a specific kind of health worker, the competencies required to perform the job, and current information about efficacy and effectiveness.

Appendix 2. Faculty Interview Protocol

Protocol for
Phase IV/V - Faculty Interviews

Name: _____

Date: _____

1. Confirm and complete curriculum analysis grid.
2. How do you go about changing your course in any way? (Probe regarding changes in topic coverage, length, concentration or depth, supportive material, format, follow-up, evaluation mechanism.)
3. When was the last time this course was changed? How significant was that change? What brought it about? Has this course ever been changed significantly? What brought that about?
4. How was this course first designed? How were the content, length, depth, material, format, follow-up, and evaluation method chosen?
5. What is the desired purpose of this course?
6. What is the desired outcome for the student?

Appendix 3. Interpretation Guide for Curricula Descriptive Grids

Key to Curriculum Description Chart

Responsible faculty members:

faculty member(s) currently responsible for this course

Course particulars:

the formal name of the course, the number the course carries in the program of studies, whether this is an undergraduate or graduate course, what year it is taken in undergraduate or graduate course studies, and whether it is a required or optional course

RCNRT relevant topics covered:

this asks for a listing of target topics of particular interest to the Commission routinely covered in this course

Length of course experience:

asks for total student contact hours in the course, and total hours on the target topics of interest to the Commission

Depth of experience:

a summary statement of the purpose of the course using the Bloom's Taxonomy as a heuristic (the Bloom's Taxonomy levels are: Level 1, Knowledge; Level 2, Comprehension; Level 3, Application; Level 4, Analysis; Level 5, Synthesis; Level 6, Evaluation)

Ancillary or support material or experiences:

refers to other material or experiences routinely made available to students to support their contact time in this course

Course format:

refers to what happens during the contact time and how many people are involved

Follow-up experience:

asks for any required course or experience that is a necessary follow-up to this course

Evaluation method:

asks for how you assess whether your purposes have been met in the course

Clarification of words and symbols used in chart:

None — this was the response provided to the question asked

Blank square — other information was provided but not on this issue

n.a. — not applicable

? — no response was provided

Appendix 4. Curricula Descriptive Grids

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Law								
Duclos, N. and 3 other section leaders	Perspectives on Law • LAW201 • undergrad. • 1st yr • required	<ul style="list-style-type: none"> women of colour and the law feminist jurisprudence 	<ul style="list-style-type: none"> 24 wks 3 hrs/wk 	Level 4: analysis	<ul style="list-style-type: none"> selected readings 	<ul style="list-style-type: none"> variable across sections lecture n = 60 in each section 	none	<ul style="list-style-type: none"> journal and essay
Boyle, C.	Feminist Perspectives on the Law • LAW201 • undergrad. • 1st yr • required (part of yr-long Perspectives on Law — LAW201)	<ul style="list-style-type: none"> feminist theories as applied to law 	<ul style="list-style-type: none"> 6 wks 2 hrs/wk 	Level 2: comprehension	<ul style="list-style-type: none"> selected readings 	<ul style="list-style-type: none"> lecture discussion n = 60 	Women and the Law • LAW458	<ul style="list-style-type: none"> 4 written assignments

Curricula Descriptive Grids (cont'd)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Law (cont'd)								
MacDougall, B.	Sexuality and the Law • LAW201 • undergrad. • 1st yr • required (part of yr-long Perspectives on Law — LAW201)	• non-traditional sexuality and the law	• 6 wks • 2 hrs/wk	Level 2: comprehension	• selected readings	• lecture • discussion • n = ?	none	• written assignments in preparation for each topic
Kline, M.	Real Property • LAW211 • undergrad. • 1st yr • required	• ownership of human tissue (4 hrs)	• 24 wks • 3 hrs/wk	Level 2: comprehension	• selected cases • interdiscip. readings	• lecture • n = 65	none	• written exams • essay • legal problem solving
Smith, L. Elliot, R. Grant, R.	Canadian Charter of Rights and Freedoms • LAW301 • undergrad.	• feminist theory at several points	?	?	?	?	?	?

Sheppard, T.	<ul style="list-style-type: none">• upper yr• required <p>Taxation I</p> <ul style="list-style-type: none">• LAW330• undergrad.• yr ?• opt/req ?	(3 hrs) <ul style="list-style-type: none">• gender and the law- deduction of alimony and maintenance payments, child care expenses• taxation of property transfers between family members	<ul style="list-style-type: none">• 45 hrs	Level 6: evaluation	<ul style="list-style-type: none">• assigned readings	<ul style="list-style-type: none">• discussion• n = ?	<ul style="list-style-type: none">• exam		
Duclos, N.	<p>Family Law</p> <ul style="list-style-type: none">• LAW348• undergrad.• upper yr• optional	<ul style="list-style-type: none">• reproductive issues- surrogacy and reproductive technology- feminist jurisprudence- gender and the law	<ul style="list-style-type: none">• 12 wks• 3 hrs/wk	Level 4: analysis	<ul style="list-style-type: none">• selected readings	<ul style="list-style-type: none">• lecture• seminar• n = 60	<ul style="list-style-type: none">• none	<ul style="list-style-type: none">• take-home written exam- choice of one among six questions	
Sheppard, T.	<p>Evidence</p> <ul style="list-style-type: none">• LAW379• undergrad.• upper yr• required	(6 hrs) <ul style="list-style-type: none">• medicine and the law- expert evidence	<ul style="list-style-type: none">• 60 hrs	Level 6: evaluation	<ul style="list-style-type: none">• assigned readings	<ul style="list-style-type: none">• discussion• n = ?	<ul style="list-style-type: none">• exam		

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Law (cont'd)								
Sheppard, T. (cont'd)		<ul style="list-style-type: none">- evidentiary aspects of disciplinary proceedings- privilege/confidentiality• gender and the law- evidentiary aspects of prosecutions of sexual offences and child abuse- spouses as witnesses						
Smith, J.C.	Jurisprudence II: Law, Myth and the Unconscious • LAW370 • undergrad. • upper yr • optional	• feminism	• 36 hrs	Level 4: analysis	• required textbook	• seminar • film/video • n = ?	none	• paper

Boyle, C.	Topics in Criminal Law • LAW422 • undergrad. • upper yr • optional	• feminist approach • gender, culture, poverty	• 13 wks • 2 hrs/wk	Level 5: synthesis	• selected readings	• seminar • n = ?	none	• class participation • paper • class presentation
Kline, M.	Feminist Legal Theory • LAW458 • undergrad. • upper yr • optional	• feminist perspective on the law	• 12 wks • 3 hrs/wk	Level 4: analysis	• selected readings	• lecture • discussion • n = 16 (10 ♀)	?	• journal recording reactions to readings and discussions • research paper
Duclos, N.	Topics in Jurisprudence: Reproduction and the Law • LAW461 • undergrad. • upper yr • optional	• fertility control • enhancement of fertility • control of pregnancy by parents • control of pregnancy by the state • surrogacy	• 12 wks • 3 hrs/wk	Level 4: analysis Level 5: synthesis	• selected readings	• seminar • n = 14	none	• research paper
?	Legal Institutions of Canadian Government • course # ? • level ? • yr ? • opt/req ?	?	?	?	?	?	?	?

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Law (cont'd)								
Oyen, G.	Intellectual Property <ul style="list-style-type: none">• course # ?• level ?• upper yr• optional	<ul style="list-style-type: none">• patent coverage for human tissue use	?	?	?	?	?	?
Smith, J.	Contemporary Jurisprudence <ul style="list-style-type: none">• course # ?• level ?• upper yr• optional	?	?	?	?	?	?	?
Saunders, D.	Sexual Orientation and Human Rights <ul style="list-style-type: none">• course # ?• level ?• upper yr• optional	?	?	?	?	?	?	?
Findlay, B.	Women and the Law	?	?	?	?	?	?	?

	• course # ? • level ? • yr ? • opt/req ?								
University/faculty: B.C./Continuing Legal Education									
Friesen, R. • Cont. Legal Ed. Society of B.C.	Developing Legal Issues for Women (Feb. 1988)	• reproductive technologies (3 hrs)	• 12 hrs	Level 1: knowledge Level 2: comprehension	?	• lecture	none	none	
Friesen, R. • Cont. Legal Ed. Society of B.C.	Equality Rights — 1990		n.a.	Level 1: knowledge	n.a.	• book and audio cassette	n.a.	n.a.	
Friesen, R. • Cont. Legal Ed. Society of B.C.	Family Practice in Provincial Court (Apr. 1991)	• paternity	?	Level 1: knowledge	?	• lecture	none	none	
University/faculty: B.C./Medicine									
Rowe, T.C.	Obstetrics • MED425 • undergrad. • 2nd yr • required	• introduction to obs/gyn	• 12 hrs	Level 2: comprehension	• suggested readings • lecture handouts • textbooks • audio-visual options	• lecture (5 hrs) • small group • clinical (bedside) groups • individual	Obstetrics — clinical clerkship • MED475	• preceptor evaluations • OSCE • multiple-choice exam	

Curricula Descriptive Grids (cont'd)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Medicine (cont'd)								
Rowe, T.C. (cont'd)						<ul style="list-style-type: none"> • preceptorships • ambulatory care groups • n = ? 		
Rowe, T.C.	Obstetrics <ul style="list-style-type: none"> • MED450 • undergrad. • 3rd yr • required 	<ul style="list-style-type: none"> • overview of obs/gyn 	<ul style="list-style-type: none"> • 110 hrs 	Level 2: comprehension	<ul style="list-style-type: none"> • suggested readings • lecture handouts • textbooks • audio-visual options 	<ul style="list-style-type: none"> • lecture (14 hrs) • small group • clinical (bedside) groups • individual preceptorships • ambulatory care groups • n = ? 	Obstetrics — clinical clerkship <ul style="list-style-type: none"> • MED475 	<ul style="list-style-type: none"> • preceptor evaluations • OSCE • multiple-choice exam
Rowe, T.C.	Obstetrics — clinical clerkship <ul style="list-style-type: none"> • MED475 	?	<ul style="list-style-type: none"> • 6 wks 	Level 3: application	<ul style="list-style-type: none"> • textbooks • suggested readings • handouts 	<ul style="list-style-type: none"> • ward assignment • scheduled 	none	<ul style="list-style-type: none"> • written log of experiences • viva voce exam

<ul style="list-style-type: none">• undergrad.• 4th yr• required					<ul style="list-style-type: none">• audio-visual options	<ul style="list-style-type: none">• call• preceptorships• small group teaching• n = ?		<ul style="list-style-type: none">• preceptor evaluations
Sweeney, V.	<ul style="list-style-type: none">• Medical Ethics• INBE403• undergrad.• 1st yr• required	<ul style="list-style-type: none">• abortion• reproductive technologies	<ul style="list-style-type: none">• 6 wks• 2 hrs/wk	Level 2: comprehension	<ul style="list-style-type: none">• selected readings	<ul style="list-style-type: none">• lecture• discussion• n = ?	<ul style="list-style-type: none">• Medical Ethics• course # ?• 4th yr seminar	<ul style="list-style-type: none">• ?
Sweeney, V.	<ul style="list-style-type: none">• Medical Ethics• course # ?• undergrad.• 4th yr• required	<ul style="list-style-type: none">• ?	<ul style="list-style-type: none">• ?	<ul style="list-style-type: none">• ?	<ul style="list-style-type: none">• ?	<ul style="list-style-type: none">• seminar	<ul style="list-style-type: none">• ?	<ul style="list-style-type: none">• ?
Friedman, J.M.	<ul style="list-style-type: none">• Medical Genetics• MED440• undergrad.• 2nd yr• required	<ul style="list-style-type: none">• genetics	<ul style="list-style-type: none">• 42 hrs	Level 2: comprehension	<ul style="list-style-type: none">• suggested readings	<ul style="list-style-type: none">• lecture• n = 30• small group• n = 12, two of these are counseling simulations• one patient	<ul style="list-style-type: none">• 2nd year optional summer student-ship (1-3 students only)• 4th year optional clinical elective	<ul style="list-style-type: none">• written exam - short and long answer• evaluation of small group participation

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Medicine (cont'd)								
Friedman, J.M. (cont'd)						presentation • one ethics panel • n = ?		
Bebbington, M.	Residency in Obstetrics and Gynaecology • post-graduate • CREOG-based learning objectives for 4-yr program	?	• 4 yrs	Level 4: analysis Level 5: synthesis	?	• direct patient care in hospital and ambulatory • graduated responsibility • seminar series • teaching rounds • directed reading • CME conferences • n = ?	?	• Royal College ITER (every 6 months) • OSCE exam (every 6 months) • CREOG multiple-choice exam (yearly) • short-answer/slides exam (yearly) • evaluation process follows Royal

?	Residency in Family Medicine • post-graduate	?	?	?	?	?	?	College exam format for obs/gyn) • Royal College Fellowship exam
Ho Yuen, B.	Fellowship in Gynaecologic Reproductive Endocrinology and Infertility • post-graduate	• clinical and research training in reproductive endocrinology and infertility with emphasis on the female patient	• 2 yrs	Level 5: synthesis Level 6: evaluation	• selected literature	• seminar • patient encounters • n = 2	none	• Royal College ITER
McLean, B. Hall, J.G.	Paediatric Residency • post-graduate • mandatory rotations in genetics	• clinical genetics	• 1 month in 1st or 2nd yr • 2 to 3 months in 3rd or 4th yr	Level 4: analysis Level 5: synthesis	• current literature • counselling • ward consults • journal club	• clinical rounds in paediatrics • mainly daily involvement in clinic activities under	• expected to do project while in department	• Fellowship (FRCP) in Paediatrics exam

Curricula Descriptive Grids (*cont'd*)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Medicine (<i>cont'd</i>)								
McLean, B. Hall, J.G. (<i>cont'd</i>)						super- vision • n = ?		
Effer, S. Gomel, V.	Perinatal Fellows • post- graduate • required rotation in genetics	• clinical genetics, especially reproductive genetics	• 3 months and extended period (1 yr) to accumu- late amniocen- tesis experi- ence (≥ 50 proce- dures)	Level 5: synthesis	• amniocen- tesis - 3-month rotation - general clinic experience, prenatal on- call and counselling	• rotation in clinic • one journal club • research project (clinical) • n = ?	?	<ul style="list-style-type: none"> • presentation of research project • evaluation of rotation • final FRCP exam in perinatology
McGillivray, B.	Fellowship in Genetics • post- graduate	• all aspects of clinical genetics	• 2-3 yrs	Level 6: evaluation	• equivalent of master's degree course work - overview of genetics - cytogenetics	• course work • regular lab rotations in 1st and 2nd yr	?	<ul style="list-style-type: none"> • currently CCMG Fellowship exam

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Continuing Medical Education (cont'd)								
Lirenman, D. (cont'd)		• management of the infertile couple (60 min.)						
Lirenman, D.	Obstetrics and Gynaecology (Nov. 1991)	• pelvic inflammatory disease (30 min.)		Level 2: comprehension	?	• lecture • n = ?	none	none
University/faculty: B.C./Nursing								
Hall, W.	Nursing Care of Individuals in the Child-Bearing Cycle • NUR334 • undergrad. • 3rd yr • required	• normal pregnancy, delivery • parenting	• 13 wks	Level 2: comprehension (lecture/lab) Level 3: application (clinical)	• required readings	• lecture/lab (32 hrs) • clinical (132 hrs) • n = 48	Family Nursing • NUR303	• pass/fail for clinical • written assignments • written exam - multiple choice - short answer - long answer
Rice, A.	Women's Health Issues • NUR409A	• feminist perspective on women's	• 13 wks • 3 hrs/wk	Level 4: analysis	• required textbooks • selected	• lecture (2 hrs/wk) • seminar	none	• written exams - mid-term

	<ul style="list-style-type: none">• undergrad.• 4th yr• optional	health reproductive technologies (3 hrs) <ul style="list-style-type: none">• new	<ul style="list-style-type: none">• 13 wks• 14 hrs/wk	Level 2: comprehension Level 3: application	<ul style="list-style-type: none">• student-located readings	<ul style="list-style-type: none">• lecture (2 hrs/wk)• clinical (12 hrs/wk)• n = 25	(1 hr/wk) <ul style="list-style-type: none">• n = ?		<ul style="list-style-type: none">• seminar project• seminar participation	and final
Carty, E.	Nursing Care of Child-Bearing Families <ul style="list-style-type: none">• NUR444• undergrad.• 4th yr• optional	<ul style="list-style-type: none">• high-risk pregnancy and delivery					?		<ul style="list-style-type: none">• literature file and analysis• clinical evaluation• take-home written exam (choice of 20% of students) or oral exam (choice of 80% of students)	clinical
Carty, E.	Clinical Specialization, Child-Bearing Families <ul style="list-style-type: none">• NUR588• graduate• yr ?• required for this specialty stream	<ul style="list-style-type: none">• sexuality• family planning• reproductive decision making• abortion• policy making on reproductive technologies	<ul style="list-style-type: none">• 24 wks• 14 hrs/wk	Level 5: synthesis Level 6: evaluation	<ul style="list-style-type: none">• selected readings	<ul style="list-style-type: none">• lecture (2 hrs/wk)• clinical (12 hrs/wk)• n = ?	?		<ul style="list-style-type: none">• pass/fail for clinical class• presentation with multiple examiners or take-home written exam	class

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Continuing Nursing Education (coordinated by Registered Nurses Association of B.C.)								
Worsfold, N. • Educational Coordinator for RNABC	Guidelines for Childbirth Ed. Programs	?	n.a.	Level 2: comprehension	?	• printed booklet	?	n.a.
Worsfold, N. • Educational Coordinator for RNABC	Guidelines for Standards of Perinatal Care (B.C. Reproductive Care Programs)	?	n.a.	Level 2: comprehension	?	• printed booklet	?	n.a.
Worsfold, N. • Educational Coordinator for RNABC	Clinical Day: Advances in Reproductive Technology (Apr. 1992)	<ul style="list-style-type: none"> • causes of infertility (50 min.) • surgical treatment of infertility (50 min.) • <i>in vitro</i> fertilization (75 min.) • genetic screening 		Level 2: comprehension	?	• lecture	none	none

[illegible]

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: B.C./Social Work (cont'd)								
Russell, M. (cont'd)	<ul style="list-style-type: none">• undergrad. or graduate• yr ?• optional							
McNicol, P.	Hospital Social Services <ul style="list-style-type: none">• SW430.012/ SW570.012• undergrad. or graduate• yr ?• optional	?	<ul style="list-style-type: none">• 13 wks• 3 hrs/wk	?	?	?	?	?
Stolar, E.	Social Welfare Problems in the Health Field: <ul style="list-style-type: none">• Theoretical Foundations• SW512• graduate• yr ?• required	<ul style="list-style-type: none">• sexually transmitted diseases used illustratively	<ul style="list-style-type: none">• 24 wks• 3 hrs/wk	Level 2: comprehension	<ul style="list-style-type: none">• selected readings	<ul style="list-style-type: none">• lecture (1st term)• seminar (2nd term)• n = ?	?	<ul style="list-style-type: none">• 2 written assignments per term

Russell, M.	Social Work Practical Methodologies: Research Techniques • SW552 • graduate • yr ? • required	• feminist research, theory and method	• 13 wks • 3 hrs/wk	Level 2: comprehension Level 3: application	• selected readings	• lecture • n = ?	?	• data analysis assignment • research report
Stolar, E.	Qualitative Research • SW554 • graduate - thesis students • yr ? • required	• feminist research (assumptions of the paradigm)	• 13 wks • 3 hrs/wk	Level 2: comprehension Level 3: application	• selected readings	• lecture • discussion • lab • n = ?	none	• 2 written assignments based on field participation
University/faculty: B.C./Continuing Social Work Education								
• a different faculty member assigned each year	?	?	?	?	?	?	?	?
University/faculty: Calgary/Law								
Martin, S. Mahoney, K.	Torts and the Loss Compensation Process • LAW406 • undergrad.	• negligence	• 75 hrs/yr	Level 2: comprehension	• selected readings	• lecture	• insurance law • social welfare law • labour law	• memoran- dum • open-book exam - mid-year and final

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Law (cont'd)								
Martin, S. Mahoney, K. (cont'd)	<ul style="list-style-type: none"> • yr ? • opt/req ? 						<ul style="list-style-type: none"> • property law • comparative legal relations children and the law 	
Pask, D.	Family Law • LAW515 • undergrad. • yr ? • opt/req ?	<ul style="list-style-type: none"> • surrogacy • embryo status as property 	<ul style="list-style-type: none"> • 14 wks • 4 hrs/wk 	Level 2: comprehension	<ul style="list-style-type: none"> • selected readings 	<ul style="list-style-type: none"> • lecture • n = ? 	<ul style="list-style-type: none"> • ? 	<ul style="list-style-type: none"> • exam or exam and paper
Mahoney, K.	The Legal Protection of Human Rights • LAW631 • undergrad. • yr ? • opt/req ?	(4 hrs) <ul style="list-style-type: none"> • access and equality issues • religious rationalizations • gender issues 	<ul style="list-style-type: none"> • 13 wks • 4 hrs/wk 	Level 2: comprehension	<ul style="list-style-type: none"> • video lecture • selected readings 	<ul style="list-style-type: none"> • seminar • n = ? 	<ul style="list-style-type: none"> • ? 	<ul style="list-style-type: none"> • seminar presentation • paper
Devlin, R.	Unpacking the Politics of Law	<ul style="list-style-type: none"> • surrogacy • feminist 	<ul style="list-style-type: none"> • 13 wks • 2 hrs/wk 	Level 4: analysis	<ul style="list-style-type: none"> • required textbook 	<ul style="list-style-type: none"> • student-led 	<ul style="list-style-type: none"> • ? 	<ul style="list-style-type: none"> • class participation

Curricula Descriptive Grids (cont'd)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Medicine								
DeLaRonde, S.	Reproductive System • MED306 • undergrad. • 1st yr • required	<ul style="list-style-type: none"> • genetics (3 hrs) • male infertility (1 hr) • female infertility (1 hr) • unexplained infertility (1 hr) • assisted reproductive technology (1 hr) 	• 83 hrs	Level 2: comprehension	?	<ul style="list-style-type: none"> • lecture (61 hrs) • lab (4 hrs) • written case problem (4 or 15 hrs) • discussion (3 hrs) • n = ? 	<ul style="list-style-type: none"> • Clerkship in Obs/Gyn • MED512 	<ul style="list-style-type: none"> • multiple-choice question and short-answer written exam • peripatetic exam - 25 to 30 stations
Singhal, N.	Continuity Course: The Infant • MED323 • undergrad. • 1st yr • required	<ul style="list-style-type: none"> • genetics (16 hrs) - lecture (12 hrs) - small group (4 hrs) 	• 52 hrs	Level 2: comprehension	<ul style="list-style-type: none"> • recommended textbooks and readings 	<ul style="list-style-type: none"> • lecture • small group • preceptor sessions • n = ? 	<ul style="list-style-type: none"> • Clerkship in Obs/Gyn • MED512 	<ul style="list-style-type: none"> • final exam - multiple-choice question - slide identification - short answer
VanOrman, C.	Continuity Course: The Child	<ul style="list-style-type: none"> (2 hrs) • sexuality development 	• 70 hrs	Level 2: comprehension	<ul style="list-style-type: none"> • recommended textbooks 	<ul style="list-style-type: none"> • lecture • preceptor sessions 	<ul style="list-style-type: none"> • Clerkship in Obs/Gyn • MED512 	?

	<ul style="list-style-type: none"> • MED325 • undergrad. • 1st yr • required 	<ul style="list-style-type: none"> • sexuality disorders 			<ul style="list-style-type: none"> • n = ? 		<ul style="list-style-type: none"> • lecture • small group • n = ? 	<ul style="list-style-type: none"> • Clerkship in Obs/Gyn • MED512 	<ul style="list-style-type: none"> • interactive clinical scenarios • multiple-choice and short-answer written exam • problem solving
Sawa, R.	<ul style="list-style-type: none"> • Continuity Course: The Family • MED421 • undergrad. • 2nd yr • required 	<ul style="list-style-type: none"> • sexuality (16 hrs) - lecture (8 hrs) - small group (8 hrs) 	<ul style="list-style-type: none"> • 96 hrs 	<ul style="list-style-type: none"> • Level 2: comprehension 					<ul style="list-style-type: none"> • preceptor reports • multiple-choice question and short-answer question exam • oral exam
Nation, J.	<ul style="list-style-type: none"> • Clerkship in Obs/Gyn • MED512 • undergrad. • 3rd yr • required 	<ul style="list-style-type: none"> • endocrinology/infertility - clinic (0.5 day) • sexually transmitted disease - clinic (0.5 day) 	<ul style="list-style-type: none"> • 6 wks • full-time 	<ul style="list-style-type: none"> • Level 3: application 	<ul style="list-style-type: none"> • required textbooks 	<ul style="list-style-type: none"> • didactic instruction (2.5 days) • ward service • on call • special sessions - clinics (2 x 0.5 days) • n = ? 	<ul style="list-style-type: none"> • ? 		<ul style="list-style-type: none"> • ?
Stewart, G.	<ul style="list-style-type: none"> • Residency Program in Obs/Gyn 	<ul style="list-style-type: none"> • endocrinology and infertility 	<ul style="list-style-type: none"> • 48 months • full-time • 3 months mandatory 	<ul style="list-style-type: none"> • Level 4: analysis • Level 5: synthesis 	<ul style="list-style-type: none"> • ? 	<ul style="list-style-type: none"> • general seminar (2 hrs/wk) • reproductive research seminar 	<ul style="list-style-type: none"> • ? 		<ul style="list-style-type: none"> • RCPSC evaluation (end of each rotation) • RCPSC ITER • RCPSC final

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Medicine (cont'd)								
Stewart, G. (cont'd)						(1 hr/wk) <ul style="list-style-type: none">• reproductive medicine journal club(1 hr/wk)<ul style="list-style-type: none">• clinical learning rotation (research, ambulatory and in-hospital experience)• one academic inquiry project• n = ?		ITER (FITER) <ul style="list-style-type: none">• resident log of experience• CREOG in-training exam• oral exam (every 3 months)• RCPSC Fellowship exam
?	Residence in Family Practice	?	?	?	?	?	?	?

Lowry, R.B.	Medical Genetics Residency Program	• 5 yrs	Level 4: analysis Level 5: synthesis Level 6: evaluation	<p>Course Format</p> <ul style="list-style-type: none"> • residency training in paediatrics or internal medicine (1 yr) • training in paediatrics or internal medicine (8 months) • training in obstetrics (2 months) • training in counselling (2 months) • cytogenetic lab (3 months) • biochemical genetics lab (4 months) • molecular genetics lab (3 months) • clinical genetics - consulting service (1 yr) • research (6 months) • clinical genetics services (6 months) • n = ? <p>Note: No ancillary materials</p>	none	<ul style="list-style-type: none"> • at the conclusion of each rotation in paediatrics and internal medicine • lab sector evaluated by preceptor and through oral exam with lab preceptor and clinical geneticist • 3 oral exams and ongoing observation in clinical settings
Lowry, R.B.	Fellowship in Medical Genetics, specialization in one of: <ul style="list-style-type: none"> • clinical genetics • cytogenetics 	• 2 yrs	Level 4: analysis Level 5: synthesis Level 6: evaluation	<p>?</p> <ul style="list-style-type: none"> • courses/seminars • rounds/clinics • lab work • n = ? 	none	?

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Medicine (cont'd)								
Lowry, R.B. (cont'd)	• molecular genetics							
University/faculty: Calgary/Continuing Medical Education								
Parboosingh, J.	Continuing Medical Ed.	• Many sessions on women's health issues offered across various courses throughout the year. Listed here are courses with specific target topics.						
Lane, C.	Obstetrics and Neonatal Update (Mar. 1992)	• preconception counselling (45 min.)	2 days	Level 2: comprehension	?	• lecture	none	none
Hall, J.	Obstetrics and Neonatal Update (Mar. 1992)	• genetics/ prenatal diagnosis (2 hrs)	2 days	Level 2: comprehension	?	• workshop	none	none
Graham, G.	Therapeutics (Apr. 1992)	• pelvic inflammatory disease (15 min.)	2 days	Level 2: comprehension	?	• lecture	none	none
Pattinson, T. Edworthy, S.	Women's Health Issues (Oct. 1991)	• recurrent pregnancy loss (1 hr)	2 days	Level 2: comprehension	• selected readings	• case-based workshop	none	none

Megran, D.	Therapeutics (Apr. 11/12, 1991)	• sexually transmitted diseases (1 hr)	2 days	Level 2: comprehension	?	• small group discussion	none	none
Dadertscher, B.	Medical Information Service (MIS)	• MIS is a literature-searching service with consultant review of information retrieved. Service is initiated by individual registered physicians through a 24-hr request telephone line. Material is returned within one working day.						
Lowry, R.B.	Bulletin of the Hereditary Diseases Program of Alberta	• Newsletter published quarterly and sent free to all registered physicians in Alberta. Topics have included prenatal diagnosis (Vol. 8, No. 4, 1989), prenatal screening for approaches to Down syndrome (Vol. 8, No. 2, 1989), investigation and management of recurrent spontaneous abortion (Vol. 7, No. 1, 1988), utilization of genetic amniocentesis by late maternal age women (Vol. 5, No. 4, 1986), artificial insemination genetic screening for donors (Vol. 5, No. 3, 1986).						
University/faculty: Calgary/Nursing								
Rogers, C.	Family Growth and Development • NUR331 • undergrad. • 1st yr • opt/req ?	• infertility • ultrasound • fetal monitoring	• 13 wks • 3 hrs/wk	Level 2: comprehension	• required textbook	• lecture • discussion • case studies • family study • n = ?	• NUR542	• paper • class presentation • mid-term • final exam
Rogers, C.	Clinical Practicum for Family Growth and Development • NUR333 • undergrad. • 1st yr ? • opt/req ?	• infertility • ultrasound • fetal monitoring	• 117 hrs	Level 3: application	?	• super- vised clinical practice • n = ?	?	• case presentation • clinical evaluation

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Nursing (cont'd)								
Rogers, C.	Clinical Practicum Intercession II • NUR339 • undergrad. • 1st yr ? • opt/req ?	?	• 100 hrs	Level 3: application	?	• supervised clinical practice • n = ?	?	• clinical evaluation
McKeil, E.	Health Assessment • NUR341 • undergrad. • 1st yr ? • opt/req ?	• well woman assessment	• 13 wks • 6 hrs/wk	Level 2: comprehension Level 3: application		• lecture (3 hrs/wk) • lab (3 hrs/wk) • n = ?	?	• evaluation of videotaped assessment • evaluation of weekly lab performance
Reimer, M.	Pathophysiology • NUR361 • undergrad. • 2nd yr (or 1st yr post-diploma bacc.) • required	(2 hrs) • sexually transmitted diseases • infertility • sterility • reproductive technology	• 13 wks • 4 hrs/wk	Level 2: comprehension	• selected readings	• lecture • n = ?	Family Growth and Development • NUR331 • Maternity	• 2 exams - multiple-choice question and short essay

Conklin, D.	Nursing of Adults I • NUR431 • undergrad. • 2nd yr ? • opt/req ?	• gynaecology • women's mental health • endometriosis	• 13 wks • 3 hrs/wk	Level 2: comprehension	• required textbook	• lecture • n = ?	• NUR432	• mid-term exam • final exam
Conklin, D.	Clinical Practicum for Adult Nursing I • NUR432 • undergrad. • 2nd yr ? • required	• gynaecology • women's mental health • endometriosis	• 162 hrs	Level 3: application	?	• super-vised clinical practice • n = ?	?	• clinical evaluation
Sparks, A.	Nursing of Adults II • NUR435 • undergrad. • 2nd yr • required	?	• 13 wks • 3 hrs/wk	Level 2: comprehension	• required textbooks	• lecture • n = ?	• NUR436	• mid-term exam • final exam
Rose, J.	Clinical Practicum for Adult Nursing II • NUR436 • undergrad. • 2nd yr • required	?	• 162 hrs	Level 3: application	?	• super-vised clinical practice • n = ?	?	• clinical evaluation
Conklin, D.	Clinical Practicum Intersession II		• 100 hrs	Level 3: application	?	• super-vised clinical	?	• clinical evaluation

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Nursing (cont'd)								
Conklin, D. (cont'd)	<ul style="list-style-type: none"> NUR439 undergrad. 2nd yr required (choice between medicine, surgery and mental health) 					practice <ul style="list-style-type: none"> n = ? 		
Hirst, S.	Issues <ul style="list-style-type: none"> NUR535 undergrad. 4th yr required 	<ul style="list-style-type: none"> sexuality (1 hr) 	<ul style="list-style-type: none"> 13 wks 3 hrs/wk 	Level 2: comprehension	<ul style="list-style-type: none"> selected readings 	<ul style="list-style-type: none"> lecture small group discussion and presentation n = ? 	<ul style="list-style-type: none"> NUR542 	<ul style="list-style-type: none"> paper class presentation
Stainton, C.	Clinical Nursing I Advanced Study of Biosocial Phenomena	<ul style="list-style-type: none"> women's health issues (for those in that specialty) 	<ul style="list-style-type: none"> 13 wks 	Level 4: analysis	<ul style="list-style-type: none"> suggested references 	<ul style="list-style-type: none"> lecture discussion n = 31 	?	<ul style="list-style-type: none"> annotated bibliography 2 papers

<ul style="list-style-type: none"> • NUR611 • graduate • yr ? • required 	<ul style="list-style-type: none"> • women's health issues (one of the possible clinical specialties) • feminist theory in practice 	<ul style="list-style-type: none"> • 13 wks • 14 hrs/wk 	Level 4: analysis	?	<ul style="list-style-type: none"> • seminar (2 hrs/wk) • lab (12 hrs/wk) • n = ? 	<ul style="list-style-type: none"> • 2 more classes and practica in the chosen specialty 	<ul style="list-style-type: none"> • paper • case study • clinical practice evaluation
Dobbie, B. Rose, J.	Advanced Clinical Practicum I <ul style="list-style-type: none"> • NUR613 • graduate • yr ? • required 						
Watson, W.	Advanced Clinical Practicum II <ul style="list-style-type: none"> • NUR653 • graduate • yr ? • required 	<ul style="list-style-type: none"> • power issues in family and marital discourse - seminar (2 hrs) 	Level 2: comprehension Level 3: application	<ul style="list-style-type: none"> • assigned textbooks 	<ul style="list-style-type: none"> • clinical application (12 hrs/wk) • seminar (2 hrs/wk) • n = ? 	?	<ul style="list-style-type: none"> • clinical performance appraisal • written case study • seminar presentation on topic
Sullivan, P.	Relationships between Nursing and Society <ul style="list-style-type: none"> • NUR669 • graduate • 2nd yr • required 	<ul style="list-style-type: none"> • social policy and nursing • women's reproductive health including new reproductive technologies • women's health 	Level 4: analysis Level 5: synthesis Level 6: evaluation	<ul style="list-style-type: none"> • selected readings 	<ul style="list-style-type: none"> • lecture • student seminar presentation • n = 25 	<ul style="list-style-type: none"> • clinical application 	<ul style="list-style-type: none"> • seminar presentation and follow-up paper • evaluation of other seminars • course participation

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Continuing Nursing Education								
Hammond, M. • Faculty of Continuing Ed.	• Topics pertinent to women are integrated with other topics, for example, family violence, palliative care, and care of the elderly. Courses are designed for all health professions as a group, not nurses in particular.							
?	Cancer in Women — a Program for Nurses (Oct. 4, 1991)	?	• 7 hrs	Level 2: comprehension	?	• lecture	none	none
University/faculty: Calgary/Social Work								
Grennell, R.	Human Sexuality • SW317 • undergrad. • yr ? • optional	• sexuality	• 13 wks • 3 hrs/wk	Level 2: comprehension	• films • suggested readings • guest speakers	• small group discussion • n = ?	none	• paper • exam • journal
?	Human Development: Adulthood • SW411 • undergrad. • 3rd yr	?	?	?	?	?	?	?

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Calgary/Social Work (cont'd)								
Valentich, M. (cont'd)	• SW555.02 • undergrad. • yr ? • optional	reproduction		application		discussion • role play • films • n = ?		exams • literature review • integrative paper on literature reviewed
?	Family Practice I • SW555.04 • undergrad. • yr ? • optional	?	?	?	?	?	?	?
?	Family Practice II • SW555.11 • undergrad. • yr ? • optional	?	?	?	?	?	?	?
?	Feminism and Social Welfare • SW621.04 • graduate	?	?	?	?	?	?	?

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Dalhousie/Law								
Rozovsky, F. Rozovsky, L.	Health Law • course # ? • undergrad. • yr ? • opt/req ?	• reproductive technology (< 2 hrs)	• 26 hrs	Level 2: comprehension	• textbook • reading list suggested	• lecture • n = ?	none	• mid-term and final written exams
Roston, I.	Law and Human Science • 2114 • undergrad. • upper yr • optional	• informed consent • research involving human subjects	• 13 wks • 2 hrs/wk	Level 4: analysis	• selected readings	• lecture • n = ?	none	• term paper • discussion • class participation
University/faculty: Dalhousie/Medicine								
Ludman, M.	Medical Genetics • course # ? • undergrad. • 1st yr • required	?	• 21 hrs	Level 1: knowledge	• patient encounter • tutorials • suggested readings	• lecture • n = 100 • small group • n = ?	?	?
Ludman, M.	Medical Genetics • course # ?	• genetic screening • genetic	• 8 hrs	Level 2: comprehension	?	• lecture • n = 100 • small	?	?

	<ul style="list-style-type: none"> • undergrad. • 3rd yr • required 	counselling					group • n = ?			
Ludman, M.	<ul style="list-style-type: none"> • Paediatric Genetics • course # ? • undergrad. • 4th yr • required 	?	• 1 hr	Level 2: comprehension		?	<ul style="list-style-type: none"> • tutorial • n = ? 	?	?	
Helleiner, C.	<ul style="list-style-type: none"> • Biochemistry • course # ? • undergrad. • 1st yr • required 	(5 hrs)	• 5 hrs	<ul style="list-style-type: none"> • Level 2: comprehension • Level 3: application 	<ul style="list-style-type: none"> • assigned readings • problems 	<ul style="list-style-type: none"> • lecture (2 hrs) • n = 100 • tutorial (3 hrs) • n = 10 	<ul style="list-style-type: none"> • final exam - several short-answer questions 			
Liston, R.M.	<ul style="list-style-type: none"> • Basic Principles and Concepts in Obs/Gyn • course # ? • undergrad. • 3rd yr • required 	<ul style="list-style-type: none"> • prenatal diagnosis • abortion • sexuality • psychosocial aspects of pregnancy (1 hr) 	• 59 hrs	Level 2: comprehension	<ul style="list-style-type: none"> • textbooks • library • elective experience 	<ul style="list-style-type: none"> • lecture (35 hrs) • case discussion (13 hrs) • patient management sessions (6 hrs) • pelvic exam seminar (5 hrs) • n = 100 	Med IV clerkship	<ul style="list-style-type: none"> • short essay • patient management problems • written exam - short answer 		

	Inter-disciplinary Course on Sexuality	?	?	?	?	?	?	• questions on 3rd-yr comprehensive written exam
	• course # ? • undergrad. • 3rd yr • required							
Wrixon, W.	Residency in Obs/Gyn	• rotation in infertility clinic (3-6 months) • core objectives (1 yr) • perinatal elective (3 months)		Level 4: analysis Level 5: synthesis	• selected literature • seminar • CME • ward rounds	• tutorials in- and out-patients • seminar • n = ?	none	• RCPSC ITER • RCPSC Fellowship exams
Gass, D.	Residency in Family Medicine	?	?	?	?	?	?	?
Wrixon, W.	Internal Medical Fellowship	• rotation in infertility clinic (3 months)		Level 5: synthesis	• selected literature • seminar • Continuing Medical Ed. • ward rounds	• tutorials in- and out-patients • seminar • n = ?	none	• RCPSC ITER • RCPSC Fellowship exams
University/faculty: Dalhousie/Continuing Medical Education								
Fleming, M.	Annual short courses in: 1) Obs/Gyn for Family	• 1989 - genetics (20 min.) • 1991	• usually 2 days	Level 2: comprehension		• lecture • n = variable	none	none

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Dalhousie/Continuing Medical Education (cont'd)								
Fleming, M. (cont'd)	Physicians 2) Paediatrics for Family Physicians	- genetic screening (30 min.) • 1992 - infertility (20 min.)						
University/faculty: Dalhousie/Nursing								
Somerfeld, D.	Nursing the Parents and Newborn • N3210/ N3210A • undergrad. • yr ? • required	• women's reproductive health • sexuality • family planning	• 13 hrs theory • 80 hrs clinical	Level 1: knowledge Level 3: application • skills	• assigned textbook • videotape • selected readings • prior or concurrent courses on - family nursing (clinical component) - teaching and learning theory - helping	• lecture • n = 24 • clinical practice - hospital - labour and delivery - home visit • n = 8/ group	• practice segment • community health nursing	Theory: • exam - multiple choice - short answer Clinical: • daily care plans • report • log • interaction analysis • self-evaluation

Horrocks, J.	Systems Theory • N5220 • graduate • yr ? • required	• socialization • gender issues • technology • and women's health • health in systems context	• 13 wks (2 hrs/wk)	Level 4: analysis	?	skills - research methods - human sexuality	• lecture/discussion • comments and illustrations • n = 20	none	• oral presentation • term paper • class discussion
Horrocks, J.	Community Health • N5400R • graduate • yr ? • required	• reproductive health • sexuality • gender issues	• 13 wks (2 hrs/wk)	Level 5: synthesis		• handout on technology involved • films • Human Sexuality course (interdiscip.)	• lecture/discussion • fieldwork placement (6 hrs/wk) • n = 8	none	• paper • clinical logs • class discussion
Somerfeld, D.	Nursing of Young Families • N5500A • graduate • yr ? • required	• women's reproductive health • gender issues • women's health • family planning policy	• 117 hrs	Level 6: evaluation		• textbooks • references - clinical consultants	• seminar (theory — 26 hrs) • clinical tutorial (13 hrs) • clinical practice (78 hrs) • n = ?	Nursing of Young Families • N5520B	• term paper • clinical journal • class participation

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Dalhousie/Nursing (cont'd)								
Martin, R.E.	Outpost Nursing Program — Family Nursing • N551 • graduate • yr ? • opt/req ?	• “theories, concepts and nursing skills necessary for the provision of care to the family unit”		Level 1: knowledge Level 2: comprehension	• supervised clinical practice including home visits	• lecture (36 hrs) • clinical practice/home visits • n = ?	?	• student presentations • student-recorded logs of home visits • written exam
Sommerfeld, D.	Nursing of Young Families • N552OB • graduate • yr ? • required • N5500A prerequisite	• gender issues • women's reproductive health	• 117 hrs	Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis	• reference textbooks • selected readings • term paper consultants	• seminar (theory — 26 hrs) • clinical tutorial (13 hrs) • clinical practice (78 hrs) • n = 4-6	master's thesis • in related area	• clinical journal • clinical project • seminar/tutorial participation
Martin, R.E.	Nursing • N0940 • graduate • yr ? • opt/req ?	• gynaecology (6 hrs) • obs/gyn in family planning clinic		Level 1: knowledge Level 2: comprehension Level 3:	• clinical experience supervised by residents/physicians	• lecture/seminar • clinic experience		• written and oral exams

		(8 hrs)	level 1	level 2	application				
University/faculty: Dalhousie/Continuing Nursing Education									
<ul style="list-style-type: none"> Not considered a faculty responsibility. 									
University/faculty: Dalhousie/Nursing, Medicine, and Theology									
Tomblin-Murphyson, G.	Inter-disciplinary Course on Human Sexuality <ul style="list-style-type: none"> course # ? undergrad. yr ? required for Nursing, Medicine, and Theology 	<ul style="list-style-type: none"> sexuality 	<ul style="list-style-type: none"> 2 days (fall) 1 day (spring) 	Level 2: comprehension	?	<ul style="list-style-type: none"> lecture small group video-tapes panels n = 200 	none		
University/faculty: Dalhousie/Social Work									
Cummings, J.	Advanced Practice <ul style="list-style-type: none"> BSW4010 undergrad. yr ? required 	<ul style="list-style-type: none"> feminist structural theory throughout 	65 hrs	Level 4: analysis	selected readings	<ul style="list-style-type: none"> lecture small group role play videotape n = ? 	?	<ul style="list-style-type: none"> exam essay 2 group presentations paper 	
Richard, B.	Foundations of Social Work <ul style="list-style-type: none"> course # ? undergrad. 	?	?	?	?	<ul style="list-style-type: none"> ? n = ? 	?		

?	<ul style="list-style-type: none"> • Droit des personnes • DRT-11391 • baccalauréat • ? année • obligatoire 	<ul style="list-style-type: none"> • l'autorité parentale • la protection de la jeunesse 	<ul style="list-style-type: none"> • 15 semaines • 3 hrs par semaine 	Niveau 2: compréhension	?	• conférence	?	?
deCastelli, M. deLeury, E. Goubau, D.	<ul style="list-style-type: none"> • Droit de la famille • DRT-15009 • baccalauréat • ? année • optionnel 	<ul style="list-style-type: none"> • les effets du mariage • les effets patrimoniaux 	?	?	?	?	?	?
?	<ul style="list-style-type: none"> • Les infractions contre les personnes • DRT-15013 • baccalauréat • ? année • optionnel 	<ul style="list-style-type: none"> • les infractions portant atteinte à la sécurité, à l'intégrité et à la réputation des personnes physiques 	<ul style="list-style-type: none"> • 15 semaines • 3 hrs par semaine 	Niveau 2: compréhension	?	• conférence	?	?
?	<ul style="list-style-type: none"> • Droit et liberté de la personne • DRT-11427 • baccalauréat • ? année • optionnel 	<ul style="list-style-type: none"> • la Charte canadienne des droits et libertés • la Charte québécoise des droits et libertés de la personne 	<ul style="list-style-type: none"> • 15 semaines • 3 hrs par semaine 		• articles suggérés	• conférence	?	• deux examens

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Laval/Droit (cont'd)								
Langevin, L.	La femme et le droit <ul style="list-style-type: none">• DRT-17049• ? cycle• ? année• ? optionnel/obligatoire	<ul style="list-style-type: none">• la condition féminine et le droit	<ul style="list-style-type: none">• 15 semaines• 3 hres par semaine	Niveau 2: compréhension	?	<ul style="list-style-type: none">• conférence	?	?
deLeury, E.	Droit des personnes <ul style="list-style-type: none">• DRT-63324• maîtrise• ? année• obligatoire dans la concentration droit privé	<ul style="list-style-type: none">• des techniques médicales à la manipulation scientifique du corps et de la vie humaine• la commercialisation des produits du corps• la recherche et l'utilisation des embryons• la thérapie génique	<ul style="list-style-type: none">• 15 semaines• 3 hres par semaine	Niveau 4: analyse	<ul style="list-style-type: none">• articles suggérés	<ul style="list-style-type: none">• cours magistraux• séminaire	?	<ul style="list-style-type: none">• un travail long• un exposé oral

University/faculty: Laval/Médecine									
		• les manipulations génétiques et le diagnostic prénatal							
Bastide, A.	Appareils reproducteurs • MED-17955 • baccalauréat • ? année • obligatoire	• vérification de l'infertilité (1 hre) • infertilité/endométriose (1 hre)	• 40 hres	Niveau 2: compréhension	• livres recommandés • documents audio-visuels • les notes de cours • les documents pour les ateliers	• cours magistraux • ateliers • laboratoire d'anatomie	• stage d'externat	• deux examens - questions aux choix - réponses ouvertes et courtes	
?	Stage d'externat appareils reproducteurs • ? n° de cours • ? cycle • ? année • ? optionnel/obligatoire	?	• 8 semaines	Niveau 3: application	?	• expériences dirigées	?	?	
Foucaulte, B.	Génétiques • ? n° de cours • baccalauréat	?	?	?	?	?	?	?	

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Laval/Médecine (cont'd)								
Foucaulte, B. (cont'd)	<ul style="list-style-type: none">• ? année• obligatoire							
Grantham, H. Parizeau, M.H.	<p>Éthique médicale</p> <ul style="list-style-type: none">• PHI-15048• baccalauréat• ? année• obligatoire	<ul style="list-style-type: none">• le diagnostic prénatal• les nouvelles techniques de reproduction	<ul style="list-style-type: none">• 13 semaines• 3 hrs par semaine	Niveau 2: compréhension	<ul style="list-style-type: none">• lectures choisies	<ul style="list-style-type: none">• conférence et discussion en plénière• petit groupe	aucune	<ul style="list-style-type: none">• remise de la formule d'évaluation pour chacun des thèmes• courts exposés écrits• travail en petit groupe• examen - questions courtes
Mare, G.	<p>Après diplôme obstétrique-gynécologie</p> <ul style="list-style-type: none">• ? n° de cours• ? cycle• ? année• ? optionnel/obligatoire	?	?	?	?	?	?	?

University/faculty: Laval/Education médicale continue									
?	?	?	?	?	?	?	?	?	?
University/faculty: Laval/École des sciences infirmières									
Gendron, C.	Les femmes et la santé <ul style="list-style-type: none">• SIN-16989• baccalauréat• ? année• optionnel	(3 hrs) <ul style="list-style-type: none">• les critiques féministes• les sciences de la santé, les mythes et les réalités• les techniques de reproduction	<ul style="list-style-type: none">• 13 semaines• 3 hrs par semaine	Niveau 4: analyse	<ul style="list-style-type: none">• deux volumes obligatoires• cinq volumes recommandés	<ul style="list-style-type: none">• cours magistraux• réflexions personnelles• documents audio-visuels• échanges• présentation des travaux des étudiants et étudiantes	?	<ul style="list-style-type: none">• réflexions• résumés critiques des volumes• travail en équipes sur un thème• participation en classe- présentation du travail	
Blondeau, D.	Déontologie infirmière <ul style="list-style-type: none">• SIN-18716• baccalauréat• ? année• obligatoire	(3 hrs) <ul style="list-style-type: none">• les nouvelles techniques de reproduction• l'avortement	<ul style="list-style-type: none">• 13 semaines• 3 hrs par semaine	Niveau 2: compréhension	<ul style="list-style-type: none">• volume obligatoire• recueil de textes	<ul style="list-style-type: none">• cours magistraux• échange et discussion en plénière• étude de cas	aucune	<ul style="list-style-type: none">• examen• autres travaux	

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Laval/École des sciences infirmières (cont'd)								
Blondeau, D. (cont'd)						<ul style="list-style-type: none">• travail d'équipe• support audio-visuel• personnel-ressource pour les diverses disciplines		
University/faculty: Laval/École des services sociaux								
Dumont, S.	Champs d'intervention: santé <ul style="list-style-type: none">• SVS-11662• baccalauréat• ? année• optionnel	<ul style="list-style-type: none">• analyse critique de l'évolution des services sociaux dans la domaine de la santé	<ul style="list-style-type: none">• 13 semaines• 3 hres par semaine	Niveau 2: compréhension	<ul style="list-style-type: none">• bibliographie par sujet	?	?	<ul style="list-style-type: none">• travail individuel• travail d'équipe
Auclair, R.	Déontologie du service social <ul style="list-style-type: none">• SVS-11687• baccalauréat	<ul style="list-style-type: none">• code d'éthique	<ul style="list-style-type: none">• 9 semaines• 3 hres par semaine	Niveau 2: compréhension	<ul style="list-style-type: none">• volume recommandé	<ul style="list-style-type: none">• exposé introductive• discussion collective		<ul style="list-style-type: none">• un examen sous forme de travail pratique• un test

	• ? année • optionnel	• l'intervention féministe dans les services sociaux	• 13 semaines • 3 hrs par semaine	Niveau 2: compréhension	• bibliographie par sujet	• ?	• apprentissage individuel	objectif - vrai ou faux
Ouellet, F.	Femmes, féminisme et service social • SVS-16551 • baccalauréat • ? année • optionnel	• l'intervention féministe dans les services sociaux	• 13 semaines • 3 hrs par semaine	Niveau 2: compréhension	• bibliographie par sujet	• ?	• ?	• examen pour tout le groupe • travail en équipe ou individuel
Fortin, D.	Méthodologie en pratique de l'organisation communautaire III • SVS-17977 • baccalauréat • ? année • optionnel	• le contexte sociale - les caractéristiques biologiques (sexe) - l'orientation sexuelle	• 9 semaines • 3 hrs par semaine	Niveau 2: compréhension	• bibliographie par sujet	• ?	• exposés et questions • atelier • plénière	• tableaux-syntheses sur les différents thèmes • examen écrit
University/faculty: McGill/Law								
?	Canadian Charter of Rights and Freedoms • course # ? • undergrad. • yr ? • opt/req ?	• equality • role of women	?	?	?	?	• ? • n = ?	?

Curricula Descriptive Grids (cont'd)

Responsible faculty members		Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Law (cont'd)									
?		Constitutional Law of Canada <ul style="list-style-type: none">• course # ?• undergrad.• yr ?• opt/req ?	<ul style="list-style-type: none">• equality provisions of the charter• role of women	?	?	?	? <ul style="list-style-type: none">• n = ?	?	?
?		Constitutional Law of the USA <ul style="list-style-type: none">• course # ?• undergrad.• yr ?• opt/req ?	<ul style="list-style-type: none">• privacy rights• feminist perspective• role of women	?	?	?	? <ul style="list-style-type: none">• n = ?	?	?
?		Criminal Law <ul style="list-style-type: none">• course # ?• undergrad.• yr ?• opt/req ?	<ul style="list-style-type: none">• women's problems in criminal justice system• sexual assault	?	?	?	? <ul style="list-style-type: none">• n = ?	?	?
?		Family Law 1 and 1A <ul style="list-style-type: none">• course # ?• undergrad.	<ul style="list-style-type: none">• feminist perspective• hierarchical under-	?	?	?	? <ul style="list-style-type: none">• n = ?	?	?

Curricula Descriptive Grids (cont'd)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Law (cont'd)								
?	<ul style="list-style-type: none"> • course # ? • undergrad. • yr ? • opt/req ? 							
?	Research Seminar <ul style="list-style-type: none"> • course # ? • undergrad. • yr ? • opt/req ? 	<ul style="list-style-type: none"> • medical law 	?	?	?	<ul style="list-style-type: none"> • n = ? 	?	?
?	Social Diversity and the Law <ul style="list-style-type: none"> • course # ? • undergrad. • yr ? • opt/req ? 	<ul style="list-style-type: none"> • differential impact of legal rules on different groups including women 	?	?	?	<ul style="list-style-type: none"> • n = ? 	?	?
?	Theories of Justice <ul style="list-style-type: none"> • course # ? • undergrad. • yr ? • opt/req ? 	<ul style="list-style-type: none"> • commentary by feminist critics on John Rawls Theory 	?	?	?	<ul style="list-style-type: none"> • n = ? 	?	?

University/faculty: McGill/Medicine									
?	Emergency Care • MED524-151M • undergrad. • 1st yr • required	?	?	?	?	?	?	• n = ?	?
Guzder Steinert Handfield-Jones, R.	Intro to the Patient • MED524-161M • undergrad. • 1st yr • required	?	?	?	?	?	?	• n = ?	?
Falcone, T.	title ? • MED534-121B • level ? • yr ? • opt/req ?	• 6 wks	?	?	?	?	• didactic • n = ?	n.a.	• exam
Falcone, T.	Reproductive Medicine • MED534-121M • undergrad. • 1st yr • required	• 28 hrs	Level 2: comprehension	?	?	?	• n = ?	• future clinical studies	?

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Medicine (cont'd)								
Falcone, T. (cont'd)		<ul style="list-style-type: none">• puberty• pregnancy• parturition• lactation• contraception• sexual dysfunction• aging						
Hamilton, E.	Obs/Gyn • MED534-300M • undergrad. • 2nd yr • required	<ul style="list-style-type: none">• gynaecologic exam• prenatal exam	• 4 wks	Level 3: application • skills	?	<ul style="list-style-type: none">• lecture• tutorials• n = ?	Obs/Gyn Clerkship • course # ?	?
?	Obs/Gyn Clerkship • course # ? • undergrad. • 3rd yr • required	?	• 6 wks	Level 3: application • skills	?	<ul style="list-style-type: none">• in- and out-patients• n = ?	?	?
?	Obs/Gyn • MED434-401M	?	?	?	?	?	?	?

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: McGill/Medicine (cont'd)									
Hamilton, E. (cont'd)		• 5th yr: chief resident (13 periods OFG)							
Nasmith, L.	Family Medicine Residency	• gynaecology • perinatology • women's health	?	Level 4: analysis Level 5: synthesis	?	?	?	?	
?	Division of Reproductive Biology • post-graduate research training M.Sc. and Ph.D.	?	?	?	?	• n = ?	?	?	
Posner, B.	Endocrinology Residency	• experience in reproductive endocrinology available	• 2 yrs	Level 4: analysis Level 5: synthesis	?	• clinical work • research project participation	none	?	

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Continuing Medical Education (cont'd)								
Howell, J.	Practical Problems in Paediatrics (Feb. 1989)	• paediatric genetics (45 min.)		Level 2: comprehension	?	• lecture	none	none
University/faculty: McGill/Nursing								
Hooten, M.	Nursing Families in the Community • NUR402A/ NUR403B • undergrad. • 3rd yr • required	• violence and impact on women • immigrant women's issues • adolescents and sexually transmitted diseases • adolescents and pregnancy • acquired immuno-deficiency syndrome (AIDS) • women's		Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation	• ? readings	• lecture/seminar (42 hrs) • n = 30-40 • clinical placement	none • except provincial nursing exams	• exams • papers • clinical evaluation

Sherrard, K.	<ul style="list-style-type: none"> Nursing NUR572-202A/ NUR572-203B/ NUR572-204C/ NUR572-205B/ undergrad. 1st yr required 	<ul style="list-style-type: none"> aging changes specific to women women in hospital 	<ul style="list-style-type: none"> 78 hrs 	Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis	<ul style="list-style-type: none"> assigned readings lab practice 	<ul style="list-style-type: none"> lecture n = 30-40 clinical placement 	<ul style="list-style-type: none"> continue in nursing program 	<ul style="list-style-type: none"> paper exam clinical evaluation
Mansi, O.	Nursing — Women's Life Cycle <ul style="list-style-type: none"> NUR572-302A/ NUR572-304B/ NUR572-312A/ NUR572-313B/ NUR572-314C/ NUR572-315C/ undergrad. 2nd yr opt/req ? 313B = 304B	<ul style="list-style-type: none"> women's life cycle normal growth and hormonal changes developmental tasks sexuality, reproduction, family planning body image coping with chronic illness and loss mental health problems ethical issues associated with abortion, 	302A+312A <ul style="list-style-type: none"> 54 hrs lecture 168 hrs clinical 304B+313B <ul style="list-style-type: none"> 39 hrs lecture 150 hrs clinical 314C+315C <ul style="list-style-type: none"> 41 hrs lecture 12 days clinical 	Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation	<ul style="list-style-type: none"> readings lab practice 	<ul style="list-style-type: none"> lecture n = 30-40 discussion clinical placement 	<ul style="list-style-type: none"> continue in nursing program 	<ul style="list-style-type: none"> exams paper clinical evaluation

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Nursing (cont'd)								
Mansi, O. (cont'd)	314C = 305C RNS Generics	contraception, the mentally ill						
Sexenic, S.	Issues and Trends in Professional Development • NUR573-507B • graduate • 1st yr • required	• history of nursing • links with status and role of women • effect of women's movement	• 29 hrs	Level 1: knowledge Level 2: comprehension Level 4: analysis Level 6: evaluation	• film	• lecture • discussion • student presentations	M.Sc.(A) • 1st yr	• field study • paper • class participation
Ezer, H.	Practice and Theory • NUR573-611D • graduate • 1st yr • required	• working with elderly • working with child-bearing families	13 wks	Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation	• film • clinical experience in hospital and home	• lecture/discussion (87 hrs) • clinical placements (hrs variable, as includes home visits) • clinical	M.Sc.(A) • 1st yr	• pass/fail • clinical presentations • papers • modules

Feeley, N.	<p>Nursing</p> <ul style="list-style-type: none"> • NUR573-611D* (classroom) • NUR573-614D (clinical) • graduate • 1st yr (RN) or 2nd yr (generic) • required 	13 wks	<ul style="list-style-type: none"> • focus on the concept of health 	<ul style="list-style-type: none"> Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation 	<ul style="list-style-type: none"> • films • clinical placements 	<ul style="list-style-type: none"> • lecture • seminar • student presentations • role play • n = 14 (range 10-15) 	<ul style="list-style-type: none"> • 2nd yr of program 	<ul style="list-style-type: none"> • pass/fail • presentations • papers
	<ul style="list-style-type: none"> • 611D - before Xmas this course is different for the RNs and generics; after Xmas it is the same - in 2nd year, students work on research projects 		<ul style="list-style-type: none"> • (3 hrs) • one role play (Jan. 22) dealt with women's health topics: menopause, abortion • one resource person discussed group work with teens on sexuality education 	<ul style="list-style-type: none"> Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation 	<ul style="list-style-type: none"> • films 	<ul style="list-style-type: none"> • seminar • role play • student presentations • n = 5 (range 5-15) 	<ul style="list-style-type: none"> • 2nd yr of program 	<ul style="list-style-type: none"> • pass/fail • papers • clinical presentations • exam
Ezer, H.	<p>Nursing</p> <ul style="list-style-type: none"> • NUR573- 	?	<ul style="list-style-type: none"> • physical assessment of 	<ul style="list-style-type: none"> Level 1: knowledge 	<ul style="list-style-type: none"> • films • clinical 	<ul style="list-style-type: none"> • lecture • seminar 	<ul style="list-style-type: none"> • 2nd yr of program 	<ul style="list-style-type: none"> • pass/fail • papers

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Nursing (cont'd)								
Ezer, H. (cont'd)	621D • graduate (generic) • 1st yr • required (624A/625B are the clinical components of 573-621D)	gynaecologic problems (3 hrs)		Level 2: comprehension Level 3: application Level 4: analysis Level 5: synthesis Level 6: evaluation	placements	• student presentations • n = 5 (range 5-15)		• clinical feedback • presentations
Myers, L.	Current Issues in Women's Health • NUR576-308B • level ? • yr ? • optional	• reproduction - menstruation (1 hr) • birth control and abortion (2 hrs) • childbirth (1.5 hrs) • reproductive technologies (1.5 hrs) • menopause (2 hrs) • hysterectomy	• 39 hrs	Level 1: knowledge Level 2: comprehension Level 3: application Level 4: analysis Level 6: evaluation	• assigned readings	• lecture • discussion • n = 64	none	• literature review • interview guide • paper • interviews with 3 women • exam

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McGill/Social Work (cont'd)								
Nichols, B. (cont'd)	Working with Refugees • course # ? • level ? • yr ? • opt/req ?	women and children						
Crane, J.	course title ? • course # ? • level ? • yr ? • opt/req ?	• sexuality and violence	?	?	?	? • n = ?	?	?
Baker, M.	course title ? • course # ? • level ? • yr ? • opt/req ?	• family policy	?	?	?	? • n = ?	?	?
University/faculty: McGill/Continuing Social Work Education								
Schragg, E.	• just initiated by alumni during 1991 • no courses offered as yet							
University/faculty: McMaster/Law								
• McMaster University does not have a law school								

Rangachari, P.K. Ramsdale, H.	Unit 1 — title ? • course # ? • undergrad. • 1st yr • required	• prenatal genetic diagnosis and screening (15 hrs)		Level 4: analysis	<ul style="list-style-type: none"> • paper case problem • community source of clients • library resources • audio-visual collection • women's health office • tutors 	<ul style="list-style-type: none"> • tutorials • individual patient contact • large group sessions • specialized workshops • n = ? 	<ul style="list-style-type: none"> • clerkship and ambulatory clinics (including the infertility clinic) 	<ul style="list-style-type: none"> • tutorial evaluation • self-evaluation • evaluation by tutor
Neville, A.	Unit 3 — title ? • course # ? • undergrad. • 1st yr • required	(15 hrs) • fertility • sexual identity • sexuality		Level 4: analysis	<ul style="list-style-type: none"> • paper case problem • community source of clients • library resources • audio-visual collection • women's health office • tutors 	<ul style="list-style-type: none"> • tutorials • individual patient contact • large group sessions • specialized workshops • n = ? 	<ul style="list-style-type: none"> • clerkship and ambulatory clinics (including the infertility clinic) 	<ul style="list-style-type: none"> • tutorial evaluation • self-evaluation • evaluation by tutor
Blumberg, P.	Unit 5 — The Life Cycle Reproductive Health • course # ? • undergrad. • 2nd yr	<ul style="list-style-type: none"> • health policy • sexuality • gender • contraception • 40-50 hrs on sexuality and gender 		Level 4: analysis	<ul style="list-style-type: none"> • paper case problem • community source of clients • library resources 	<ul style="list-style-type: none"> • tutorials • individual patient contact • large group sessions 	<ul style="list-style-type: none"> • clerkship and ambulatory clinics (including the infertility clinic) 	<ul style="list-style-type: none"> • 1McCOPE (exam) • peer evaluation through tutorials • 2 formal

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McMaster/Medicine (cont'd)								
Blumberg, P. (cont'd)	<ul style="list-style-type: none">• required	<ul style="list-style-type: none">• 30 hrs on prenatal diagnosis• 1 hr on taking a sexual history• 6 hrs on history and physical of the pregnant woman• 3 hrs on the biology of reproduction			<ul style="list-style-type: none">• audio-visual collection• women's health office• tutors	<ul style="list-style-type: none">• specialized work-shops• n = ?	clinic)	<ul style="list-style-type: none">• case presentations• health problem• prenatal exercise• self-evaluation exercises• structured objective personal clinical assessment (SOPCA)• multiple-choice exam measuring content, mastery, and clinical reasoning ability

Wright, N.	Unit 6 — Clerkship in Obs/Gyn • course # ? • undergrad. • 3rd yr • required	<ul style="list-style-type: none"> • sexuality • sexual dysfunction and disorders (pelvic inflammatory disease, premenstrual syndrome) 	<ul style="list-style-type: none"> • 4 wks • 1.5 hrs case discussion	Level 3: application	?	<ul style="list-style-type: none"> • patient contact under supervision • n = ? 	none	?
Thomas, J.	"Ethics Problem: Carol, J." (available for use in required unit) • course # ? • undergrad. • yr variable • optional	<ul style="list-style-type: none"> • sterilization reversal 	<ul style="list-style-type: none"> • 2 hrs 	Level 4: analysis	?	<ul style="list-style-type: none"> • small group discussion • n = ? 	none	?
Cohen, G.	Human Sexuality Workshop • multidiscip. • undergrad. • yr ? • opt/req ?	<ul style="list-style-type: none"> • sexuality 	<ul style="list-style-type: none"> • 1 day 	Level 2: comprehension		<ul style="list-style-type: none"> • large group info sessions • small group discussion sessions • n = ? 	none	none
Cohen, G.	Gender Issues Workshop • course # ? • undergrad. • yr ?		<ul style="list-style-type: none"> • 1 day 	Level 2: comprehension		<ul style="list-style-type: none"> • large group info sessions • small group 	none	<ul style="list-style-type: none"> • a pre- and post-test

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McMaster/Medicine (cont'd)								
Cohen, G. (cont'd)	• opt/req ?					discussion sessions • n = ?		
Cohen, M.	Women's Health Office • various seminars • all levels • optional	<ul style="list-style-type: none"> • women, health and development (1 hr) • women and perinatal death (1 hr) • women and acquired immuno-deficiency syndrome (AIDS) (1 hr) • body image (1 hr) • women and substance abuse (1 hr) • health care as a hetero-sexual 	• 1 hr/seminar	Level 2: comprehension		<ul style="list-style-type: none"> • lecture/discussion • n = ? 	none	none

Burrows, R. Residency in Obs/Gyn	privilege (1 hr) • disabled women and health (1 hr) • breast cancer (1 hr) • gender bias in research (1 hr) • women and aging (1 hr)	• 4 yrs	Level 4: analysis Level 5: synthesis	?	• super- vised clinical experi- ence • n = ?	?	• oral exam (4 times/yr each yr) • multiple- choice exam (1/yr each yr) • direct obser- vation of clinical skills • chart review • journal club • rounds • in-training exams (CREOG) • In-Training Evaluation Report (ITER) • assessment of technical skills • RCPSC Fellowship
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Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McMaster/Medicine (cont'd)								
Burrows, R. (cont'd)								exam
Burrows, R.	Obs/Gyn Residency • academic half-days	<ul style="list-style-type: none"> • adolescent gynaecology (1 hr) • sexuality (1 hr) • contraception (1 hr) • menopause (1 hr) • sexual dysfunction (1 hr) 	• 0.5 day/course topic	Level 2: comprehension	?	<ul style="list-style-type: none"> • lecture/discussion • n = ? 	?	?
Macdonald, P.	Family Practice Residency	<ul style="list-style-type: none"> • obstetrics and gynaecology rotation • 2 months required plus 1 month optional 	• 2 yrs	Level 4: analysis Level 5: synthesis	?	<ul style="list-style-type: none"> • supervised clinical responsibilities • n = ? 	?	?
Macdonald, P.	Practice Residency	• relevant behavioural science	• ? hrs wky	Level 2: comprehension	?	• lecture/discussion	?	?

	<ul style="list-style-type: none"> academic half-days 	<ul style="list-style-type: none"> male and female sexuality (3.5 hrs) sexual assessment (3.5 hrs) contraception (3.5 hrs) 	<ul style="list-style-type: none"> 0.5 day/ course topic 	Level 2: comprehension	?	<ul style="list-style-type: none"> small group tutorial 	?	?
Charles, C.	<ul style="list-style-type: none"> Applied Sociology of Health and Health Care MS722 graduate yr ? optional 	<ul style="list-style-type: none"> social construction of illness disability (3 hrs) health and illness behaviour (3 hrs) 	<ul style="list-style-type: none"> 13 wks 3 hrs/wk 	Level 2: comprehension Level 4: analysis	<ul style="list-style-type: none"> selected readings assigned weekly 	<ul style="list-style-type: none"> lecture/ discussion n = 6 	none	<ul style="list-style-type: none"> paper class presentation of paper
Lomas, J.	<ul style="list-style-type: none"> Health Policy Analysis MS738 graduate yr ? optional 	<ul style="list-style-type: none"> health and health care policy methods reproductive care (illustrations) power relationships 	<ul style="list-style-type: none"> 13 wks 3 hrs/wk 	Level 2: comprehension Level 4: analysis	<ul style="list-style-type: none"> selected readings weekly written case 	<ul style="list-style-type: none"> lecture (1 hr/wk) tutorial (2 hrs/wk) n = 20 	none	<ul style="list-style-type: none"> major paper performance in tutorial presentation to group
Davis, D.	<ul style="list-style-type: none"> Short course on gynaecology and women's 	<ul style="list-style-type: none"> infertility (1.25 hrs) 		Level 2: comprehension	?	<ul style="list-style-type: none"> lecture panel 	none	none

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: McMaster/Medicine (cont'd)									
Davis, D. (cont'd)	health issues (Mar. 1991)								
?	Short course on infertility management (April 10, 1991)	• infertility	• 1 day	Level 2: comprehension	?	• lecture/discussion	none	none	
?	Rounds on human genetics (May 1991)	• molecular diagnosis of genetic diseases (1.5 hrs)	• 1 day	Level 2: comprehension	?	• lecture/discussion	none	none	
?	Short course on sexually transmitted diseases (Nov. 1991)	• sexually transmitted diseases	• 1 day	Level 2: comprehension	?	• lecture/discussion	none	none	
?	Tele-medicine session on women's infertility and premenstrual	• infertility (1 hr)	• 2 hrs	Level 2: comprehension	?	• lecture/discussion	none	none	

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McMaster/Nursing (cont'd)								
?	• course #s ? • undergrad. • required							
?	Required non-health sciences courses: Psychology/Sociology/Humanities ? • course #s ? • undergrad. • required	?	?	?	?	?	?	?
	3rd-yr focus: coping with illness							
?	Health, Science and Society • 3B4 • undergrad. • opt/req ?	• power imbalances among interest groups • ethical, moral, and legal issues in	• 13 wks • 3 hrs/wk	Level 2: comprehension	• suggested readings	• large group session (1 hr/wk) • tutorials (2 hrs/wk) • n = ?	?	• mid- and end-term tutorial evaluation (evaluation by peers and by

		health and health care • women and health							tutorial leader)
		4th-yr focus: <i>independent practice and professional issues</i>							
?		Critical Appraisal • course # ? • undergrad. • opt/req ?	?	?	?	?	?	?	?
?		Research • course # ? • undergrad. • opt/req ?	?	?	?	?	?	?	?
Cohen, G.		Human Sexuality Workshop • multidiscip. • undergrad. • yr ? • required	• sexuality	• 1 day	Level 2: comprehension	• selected readings	• large group info sessions • small group discussion sessions • n = ?	?	none
Cohen, G.		Gender Issues Workshop • course # ? • undergrad. • yr ? • optional	• gender	• 1 day	Level 2: comprehension	• selected readings	• large group info sessions • small group discussion sessions • n = ?	?	• a pre- and post-test

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: McMaster/Social Work								
Aronson, J.	Social Work Practice with Women • SW4T03E • undergrad. • yr ? • optional	• situation of women as recipients and providers of social welfare services • gender	• 13 wks • 3 hrs/wk	Level 4: analysis	• bibliography • textbook	• guest speakers • lecture • discussion • films • student presentations • journals • a list of local resources • n = ?	none	• 2 papers
Cain, R.	Human Sexuality • SW3003E • undergrad. • yr ? • optional	• sexuality	• 13 wks • 3 hrs/wk	Level 2: comprehension	• required textbook	• lecture • n = ?	none	• multiple-choice/short essay exam • joint paper (2 students) arguing either side of provided contentious issue
Meredith, G.	Social Aspects	• new	• 13 wks	Level 2:	• required	• lecture/ • n = ?	none	• mid-term

	of Health and Disease <ul style="list-style-type: none">• SW3C03• level ?• 3rd yr• optional	reproductive technologies used as examples in health policy	• 3 hrs/wk	comprehension Level 4: analysis	textbook <ul style="list-style-type: none">• suggested readings	discussion <ul style="list-style-type: none">• n = ?	essay exam <ul style="list-style-type: none">• analytic essay paper
Watt, S.	Medical and Health Policy <ul style="list-style-type: none">• SW710• graduate• yr ?• optional	?	<ul style="list-style-type: none">• 13 wks• 3 hrs/wk	Level 4: analysis	<ul style="list-style-type: none">• suggested readings	?	<ul style="list-style-type: none">• analytic term paper• course participation
?	Technology in Social Welfare <ul style="list-style-type: none">• SW3J03• level ?• yr ?• opt/req ?	?	?	?	?	?	?
University/faculty: McMaster/Continuing Social Work Education							
Watt, S.	Newly organized joint venture with Dept. of Continuing Studies.						
University/faculty: Saskatchewan/Law							
Romero, L.	Contracts <ul style="list-style-type: none">• LAW201.6• undergrad.• 1st yr• required	<ul style="list-style-type: none">• surrogacy (1.5 hrs)	<ul style="list-style-type: none">• 39 hrs	Level 2: comprehension	<ul style="list-style-type: none">• textbooks• readings	<ul style="list-style-type: none">• seminar• n = 20	<ul style="list-style-type: none">• 2 or 3 papers• exam• analysis of situation
Purich, D.	Personal Property <ul style="list-style-type: none">• LAW208.6	(2 hrs) <ul style="list-style-type: none">• property in the human body	<ul style="list-style-type: none">• 78 hrs	Level 2: comprehension	?	<ul style="list-style-type: none">• lecture• n = 56	<ul style="list-style-type: none">• 2 exams• situations to analyze

Curricula Descriptive Grids (cont'd)

Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Saskatchewan Law (cont'd)								
Purich, D. (cont'd)	<ul style="list-style-type: none"> • undergrad. • 1st yr • required 	<ul style="list-style-type: none"> • embryo as property • surrogacy 						
Bilson, B. Cooper-Stephenson, K.	Personal Injuries • LAW212.6 • undergrad. • 1st yr • required	<ul style="list-style-type: none"> • gender 	<ul style="list-style-type: none"> • 78 hrs 	Level 2: comprehension	<ul style="list-style-type: none"> • textbooks 	<ul style="list-style-type: none"> • lecture • n = 56 	none	<ul style="list-style-type: none"> • 2 exams • problems • essay
Greshner, D.	Constitutional Law • LAW233.3 • undergrad. • 1st yr • required	<ul style="list-style-type: none"> • abortion 	<ul style="list-style-type: none"> • 39 hrs 	Level 2: comprehension	<ul style="list-style-type: none"> • casebook 	<ul style="list-style-type: none"> • lecture • n = ? 	none	<ul style="list-style-type: none"> • exam involving problems and essays
Romero, L.	Bridging week (theory and legal reasoning) • course # ? • undergrad. • 1st yr • required	• human body ownership (1.5 hrs)	<ul style="list-style-type: none"> • 30 hrs 	Level 2: comprehension	<ul style="list-style-type: none"> • readings 	<ul style="list-style-type: none"> • videotape • role play • speakers • discussion • n = ? 	<ul style="list-style-type: none"> • theory courses 	<ul style="list-style-type: none"> • essay

Wiegiers, W.	Feminist Legal Theory • LAW393.3(1) • undergrad. • 2nd yr • 1 of 6 theory courses is required	<ul style="list-style-type: none"> • sexuality • feminist theory • reproduction 	• 39 hrs	Level 4: analysis	<ul style="list-style-type: none"> • casebook • reserved readings 	<ul style="list-style-type: none"> • seminar • n = 20 	none	<ul style="list-style-type: none"> • 3 commentaries on assigned material • 2 papers on issue - open choice • class participation
Greshner, D.	Advanced Constitutional Law • LAW431.3 • level ? • upper yr • opt/req ?	<ul style="list-style-type: none"> • exclusion of women in debates • abortion • Charter • Section 15 	• 39 hrs	Level 2: comprehension	<ul style="list-style-type: none"> • assigned readings 	<ul style="list-style-type: none"> • seminar • n = 15 	none	<ul style="list-style-type: none"> • papers and/or oral exams
Cooper-Stephenson, K.	Jurisprudence and Tort Law • course # ? • level ? • upper yr • opt/req ?	<ul style="list-style-type: none"> • gender issues 	• ? hrs	?	?	<ul style="list-style-type: none"> • ? • n = ? 	?	?
Greshner, D.	Jurisprudence • LAW810 • graduate • yr ? • required	<ul style="list-style-type: none"> • feminist theory • effect of reproduction on law 	• 39 hrs	Level 2: comprehension	<ul style="list-style-type: none"> • assigned readings 	<ul style="list-style-type: none"> • seminar • n = 20 	none	<ul style="list-style-type: none"> • papers
University/faculty: Saskatchewan/Continuing Legal Education								
Schmeiser, E.		no coverage						

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Saskatchewan/Medicine								
Old, L.	First Aid • Intdl 201.1 • undergrad. • 1st yr • required	• emergency delivery (2 hrs)	• 24 hrs	Level 2: comprehension	?	• observation • n = 60	Clinical Skills • Intdl 301.6 Obs/Gyn Clerkship • Intdl 601.6	• multiple-choice exam
Andres, D.	Human Growth and Development • Intdl 204.6 • undergrad. • 1st yr • required	(3 hrs) • prenatal care • birth • neonatal bonding	• 75 hrs	Level 2: comprehension	?	• lecture • clinical correlation • n = 60	Clinical Skills • Intdl 301.6 Obs/Gyn Clerkship • Intdl 601.6	• papers of student's choice
Chizen, D.	Clinical Skills • Intdl 301.6 • undergrad. • 2nd yr • required	(12 hrs) • introduction to history taking (obstetric, gynaecologic, sexual) • introduction to pelvic exam	• 126 hrs	Level 3: application	?	• lecture • demos • pelvic teaching associates • n = ?	Obs/Gyn Clerkship • Intdl 601.6	?
Chizen, D.	Clinical Sciences	• introduction to ward-based	• 30 hrs	Level 3: application	?	• lecture demon-	Obs/Gyn Clerkship	• 3 stations OSCE exam

	<ul style="list-style-type: none"> • Intl 402.18 • undergrad. • 3rd yr • required 	obs/gyn	<ul style="list-style-type: none"> • skills 			<ul style="list-style-type: none"> • videos • n = 60 	• Intl 601.6		
Chizen, D.	Concurrent Course I (Obs/Gyn) <ul style="list-style-type: none"> • Intl 403.15 • undergrad. • 3rd yr • required 	(3 hrs) <ul style="list-style-type: none"> • overview of obstetrics, gynaecology, pathology • sexual medicine and subspecialties • infertility • reproductive endocrinology 	Level 2: comprehension	?	?	<ul style="list-style-type: none"> • lecture • n = ? 	Obs/Gyn Clerkship • Intl 601.6	<ul style="list-style-type: none"> • multiple-choice exam 	
Chizen, D.	Obs/Gyn Clinical <ul style="list-style-type: none"> • Intl 502.0 • undergrad. • 4th yr • optional 	?	Level 3: application	?	?	<ul style="list-style-type: none"> • ? • n = ? 	• post-graduate	?	
Chizen, D.	Obs/Gyn Clerkship <ul style="list-style-type: none"> • Intl 601.6 • undergrad. • 4th yr • required 	?	Level 3: application	?	?	<ul style="list-style-type: none"> • ? • n = ? 	?	?	
Korchinski, E.	Family Medicine Residency <ul style="list-style-type: none"> • follows 	<ul style="list-style-type: none"> • obstetrics and gynaecology (12 wks) 	Level 4: analysis Level 5: synthesis	?	?	<ul style="list-style-type: none"> • in- and outpatient care • n = ? 	none	<ul style="list-style-type: none"> • procedures log • participation in daily 	

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Saskatchewan/Medicine (cont'd)								
Korchinski, E. (cont'd)	guidelines set by "Report of the Post Graduate Family Medicine Education Joint Committee on Residency Training in Family Medicine"							<ul style="list-style-type: none">rounds• evaluation by senior nursing staff• evaluated by Family Medicine and Obs/Gyn dept. faculty, Obstetrics senior resident, and Head of Obstetrics
Turnell, R.	Obs/Gyn Residency <ul style="list-style-type: none">• follows CREOG guidelines	<ul style="list-style-type: none">• reproductive endocrinology and infertility• maternal-fetal medicine (3-6 months)• medical genetics (6 months)	• 2 yrs	Level 4: analysis Level 5: synthesis	?	<ul style="list-style-type: none">• in- and outpatient care• n = ?	none	<ul style="list-style-type: none">• assessment by attending staff• RCPSC ITER• research paper• RCPSC Fellowship

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Saskatchewan/Nursing (cont'd)								
Calder, B. (cont'd)	Expanding Family • NUR322.3 • undergrad. • 2nd yr • required	during child-bearing period • infertility • sexuality and family planning (1 hr) • genetic screening (4 hrs)			models	• case method • n = 70	Expanding Family • NUR362	
Kyle, M.	Professional Nursing Practice • NUR434.6 • undergrad (Post-RN) • yr ? • required	• sexuality	• 91-130 hrs	Level 6: evaluation	• selected references	• lecture • practice • n = ?	?	• individual learning contracts
University/faculty: Saskatchewan/Continuing Nursing Education								
Norum, M.	Paediatrics, Obstetrics and Gynaecology — (POGO)	• fertility/infertility (45 min.)		Level 2: comprehension	?	• lecture	none	none

[illegible]

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Toronto/Law (cont'd)								
Nedelsky, J.	Introduction to Legal Theory • LAW247 • level ? • upper yr • optional	• contemporary debates in legal theory - approx. 1/3 (9 hrs) on feminist theory and its conceptions of the self, rights, law	• 13 wks • 2 hrs/wk	Level 5: synthesis	• selected readings	• seminar • n = 12	none	• synthesis paper
Dickens, B.	Medical Jurisprudence • LAW267 • undergrad. • upper yr • optional	• informed consent • negligence • surrogacy • prevention of infertility	• 13 wks • 2 hrs/wk	Level 4: analysis Level 5: synthesis	• selected readings	• seminar • n = 35 (30 \$)	• extended paper or directed research on topic	• take-home written exam • term paper • analytical paper
Trebilcock, M.	The Limits of Freedom of Contract • LAW274 • undergrad. • upper yr • seminar • optional	• surrogacy	• 13 wks • 2 hrs/wk	?	?	• seminar	?	?

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Toronto/Medicine								
Siegal-Bartelt, J.	Difficult Decisions in Genetics <ul style="list-style-type: none">• course # ?• undergrad.• 1st yr• optional	• prenatal diagnosis	?	?	?	• seminar <ul style="list-style-type: none">• n = ?	none	?
Hébert, P.	Human Values in Medicine <ul style="list-style-type: none">• ETH111• undergrad.• 1st yr• required	• genetic medicine <ul style="list-style-type: none">• new reproductive technologies• surrogate consent	• 13 wks	Level 4: analysis	• selected readings	• lecture (10 hrs) <ul style="list-style-type: none">• discussion/seminar (8 hrs)• n = ?	MED II <ul style="list-style-type: none">• course on medical jurisprudence• required (B. Dickens) MED III <ul style="list-style-type: none">• course in ethics• optional (J. Seann)	• written mid-term exam (case analysis) <ul style="list-style-type: none">• written final exam (case analysis)
Dickens, B.	Medical Jurisprudence <ul style="list-style-type: none">• course # ?• undergrad.	• new reproductive technologies (1 hr)	• 8 hrs	Level 2: comprehension	• selected readings	• lecture <ul style="list-style-type: none">• n = ?	none	• written paper (descriptive)

Shier, M.	<ul style="list-style-type: none"> • 2nd yr • required 	<ul style="list-style-type: none"> • consent • negligence • confidentiality 	<ul style="list-style-type: none"> • sexually transmitted diseases • sexuality and fertility • infertility 	<ul style="list-style-type: none"> • 13 wks 	Level 2: comprehension Level 3: application	<ul style="list-style-type: none"> • core textbook • workbook in Obs/Gyn • programmed instruction booklets • required textbooks • recommended textbooks 	<ul style="list-style-type: none"> • lecture (16 hrs) • base hospital teaching (66 hrs) - seminar - self-directed learning time - tutorials - bedside and outpatient clinics - professional patients • n = ? 	MED IV in Obs/Gyn Clerkship	<ul style="list-style-type: none"> • multiple-choice exam • ITER by clinic and seminar leader
Shier, M.	Clerkship in Obs/Gyn <ul style="list-style-type: none"> • course # ? • undergrad. • 4th yr • required 	?		<ul style="list-style-type: none"> • 6 wks • full-time 	Level 3: application	<ul style="list-style-type: none"> • required textbooks • recommended textbooks • general references • discovery learning guide 	<ul style="list-style-type: none"> • participation in patient care • didactic teaching (rounds, journal clubs, confer- 	none	<ul style="list-style-type: none"> • ward work assessment • oral exam (2 examiners) • multiple-choice exam

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: Toronto/Medicine (cont'd)									
Shier, M. (cont'd)						ences) • seminar (3/wk) • video-tapes • n = ?			
White, D.	Clerkship in Family and Community Medicine • course # ? • undergrad. • 4th yr • required	• family life cycle • sexually transmitted diseases	?	Level 3: application	• recommended reference textbooks	• patient interaction • seminar • n = ?	?	• assessment of clinical work • written exam (short essay questions)	
DePetrillo, A.D.	Obs/Gyn Residency • follows CREOG objectives	?	• 5 yrs	Level 4: analysis Level 5: synthesis	?	• clinical work in various teaching units • rounds • weekly half-day educational	none	• clinical assessment (quarterly) • ITER (every 6 months) • CREOG exam (annually) • 2 oral exams	

Librach, S.L.	Family Practice Residency	<ul style="list-style-type: none">• rotation in obstetrics and gynaecology (3 months)• care of women	<ul style="list-style-type: none">• 2 yrs	Level 4: analysis Level 5: synthesis	?	<ul style="list-style-type: none">• rotations through specialty services• 1/2 day/wk continuity course in family medicine	<ul style="list-style-type: none">• evaluation form completed by supervisor in each rotation• CFPC exams	<div>sessions</div> <ul style="list-style-type: none">- lecture/seminar- journal club- case presentation• special lecture (occasional)• annual symposia• research project• n = ?	<div>(annually)</div> <ul style="list-style-type: none">• RCPSC Fellowship exam
University/faculty: Toronto/Continuing Medical Education									
Tennenbaum, J.	CME Update for Family Physicians (Feb. 1990)	<ul style="list-style-type: none">• the infertile couple (45 min.)	<ul style="list-style-type: none">• 2 days	Level 2: comprehension	?	<ul style="list-style-type: none">• lecture	none	none	

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Toronto/Continuing Medical Education (cont'd)								
Morgan, J.E.	CME Annual Review in Obs/Gyn (May 1990)	<ul style="list-style-type: none">• medical legal aspects of modern reproductive technologies (30 min.)• low sperm count (30 min.)• ovulation induction (30 min.)• imaging of infertility (30 min.)• advances in <i>in vitro</i> fertilization (30 min.)• endoscopic surgery and infertility (30 min.)	<ul style="list-style-type: none">• 2 days	Level 2: comprehension	?	<ul style="list-style-type: none">• lecture	none	none

Steinberg, W.M.	CME Clinical Day: Ethical Dilemmas in Reproductive Medicine	<ul style="list-style-type: none"> • new reproductive technologies (35 min.) • <i>in vitro</i> fertilization (35 min.) • the law interprets the new reproductive frontiers (35 min.) 	• 1 day	Level 2: comprehension	?	• lecture	none	none
Morgan, J.E.	CME Annual Review in Obs/Gyn (Apr. 1991)	<ul style="list-style-type: none"> • prenatal screening (30 min.) • assessing outcomes of <i>in vitro</i> fertilization pregnancy (30 min.) • endoscopic surgery and infertility (30 min.) • imaging in infertility (30 min.) • male infertility (1 hr) • low sperm count (30 min.) 	• 2 days	Level 2: comprehension	?	• lecture	none	none

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: Toronto/Continuing Medical Education (cont'd)									
Morgan, J.E. (cont'd)		• trans-uterine insemination (30 min.)							
?	CME Current Concepts Series: Obs/Gyn Dept. Physiology and Management of Endometriosis (date ?)	• endometriosis associated with infertility (30 min.)	• 2 days	Level 2: comprehension	?	• lecture	none	none	
?	CME Current Concepts Series: Obs/Gyn Dept. The Great Lakes Chromosome Conference (May 1991)	• prenatal diagnosis and reproductive technologies (2 hrs)		Level 2: comprehension	?	• lecture	none	none	

?	CME Current Concepts Series: Obs/Gyn Dept. Update for Family Physicians (Mar. 1992)	• infertility (20 min.)	• 2 days	Level 2: comprehension	?	• lecture	none	none
University/faculty: Toronto/Nursing								
Ho, R.	Normal Growth and Development • course # ? • undergrad. • 1st yr • required	• sexuality	• 8 wks	Level 2: comprehension	• required textbooks	• lecture • videotape • n = ?	none	• written assignment • written exam
Khan, P.	Nursing Theory • NUR200 • undergrad. • 2nd yr • required	• sexuality (2 hrs)	• 12 wks • 3 hrs/wk	Level 2: comprehension	• selected readings	• lecture • video • class • discussion • value clarification • exercise • n = ?	none	• exam • questions • essay
Young, L.	Maternal and Infant • NUR202/ NUR302 • undergrad. • 2nd yr • required	• sexuality • family planning	• 12 wks • 13 hrs/wk	Level 2: comprehension Level 3: application	• required textbooks • selected readings	• lecture/ discussion (3 hrs/wk) • clinical (7 hrs/wk) • n = ?	none	• written assignments • case presentation • clinical conferences • participation

Curricula Descriptive Grids (cont'd)

Curricula Descriptive Grids (cont'd)								
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method
University/faculty: Toronto/Nursing (cont'd)								
Wynn, F.	Nursing Theory • NUR300 • undergrad. • 3rd yr • required	<ul style="list-style-type: none"> • feminist perspective • gender issues • women's health • reproductive technology • family planning and policy 	<ul style="list-style-type: none"> • 24 wks • 3 hrs/wk 	Level 4: analysis	<ul style="list-style-type: none"> • required textbooks • selected readings 	<ul style="list-style-type: none"> • lecture • n = ? 	none	<ul style="list-style-type: none"> • essay • exam • questions
Donner, G.	Professionalism and Nursing Issues • NUR400 • undergrad. • 4th yr • required	<ul style="list-style-type: none"> • gender issues • health policy 	<ul style="list-style-type: none"> • 24 wks • 2 hrs/wk 	Level 4: analysis	<ul style="list-style-type: none"> • required textbooks • selected readings 	<ul style="list-style-type: none"> • lecture/discussion • n = ? 	none	<ul style="list-style-type: none"> • written assignments
Butani, P. Young, L.	Maternal and Child • NUR402 • undergrad. • 4th yr • required for	<ul style="list-style-type: none"> • family planning • sexual health counselling 	<ul style="list-style-type: none"> • 24 wks • 2 hrs/wk 	Level 3: application	<ul style="list-style-type: none"> • supplemental experiences with groups 	<ul style="list-style-type: none"> • clinic (4 hrs/wk) • clinical conferences 	none	<ul style="list-style-type: none"> • written assignments • clinical conferences • presenta-

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: Toronto/Social Work (cont'd)									
? (cont'd)	• optional								
Neysmith, S.	Women and Social Policy in Canada • SW4403 • graduate • 2nd yr • optional	• feminist perspective	• 12 wks • ? 2 hrs/wk	Level 4: analysis	• selected readings	• lecture • student presentations	?	• class presentation • written analysis of existing program	
Schlesinger, B.	Human Sexuality • SW4408 • graduate • 2nd yr • optional	• sexuality	• 12 wks • ? 2 hrs/wk	Level 2: comprehension	• selected readings	?	?	• reading diary on topic • review of literature, or field interview/questionnaire on topic	
?	Social Work Practice in Health and Illness • SW4615	?	• 12 wks • ? 2 hrs/wk	?	?	?	?	?	

Curricula Descriptive Grids (cont'd)									
Responsible faculty members	Course particulars	RCNRT relevant topics covered	Length of course experience	Depth of experience	Ancillary or support material or experiences	Course format	Follow-up experience	Evaluation method	
University/faculty: Toronto/Continuing Social Work (School of Continuing Studies) (cont'd)									
Mezes, C. (cont'd)								references • analysis of current case	
Irving, H. Mecklinger, D. (co-teachers)	Family Mediation • course # ? • level ? • yr ? • optional	• feminist perspectives in family mediation	• 5 days • 40 hrs	Level 2: comprehension Level 3: application	• selected readings	• lecture/discussion • role play • video-tapes	?	• analysis of current case	

Appendix 5. Bloom's Taxonomy

Instrumentation of the Taxonomy of Educational Objectives: Cognitive Domain

Taxonomy Classification

- 1.00 Knowledge
 - 1.10 Knowledge of Specifics
 - 1.11 Knowledge of Terminology
 - 1.12 Knowledge of Specific Facts
 - 1.20 Knowledge of Ways and Means of Dealing with Specifics
 - 1.21 Knowledge of Conventions
 - 1.22 Knowledge of Trends, Sequences
 - 1.23 Knowledge of Classifications and Categories
 - 1.24 Knowledge of Criteria
 - 1.25 Knowledge of Methodology
 - 1.30 Knowledge of the Universals and Abstractions in a Field
 - 1.31 Knowledge of Principles, Generalizations
 - 1.32 Knowledge of Theories and Structures
- 2.00 Comprehension
 - 2.10 Translation
 - 2.20 Interpretation
 - 2.30 Extrapolation
- 3.00 Application
- 4.00 Analysis
 - 4.10 Analysis of Elements
 - 4.20 Analysis of Relationships
 - 4.30 Analysis of Organizational Principles
- 5.00 Synthesis
 - 5.10 Production of a Unique Communication
 - 5.20 Production of a Plan, or Proposed Set of Operations
 - 5.30 Derivation of a Set of Abstract Relations

**Instrumentation of the Taxonomy of Educational Objectives:
Cognitive Domain (cont'd)**

Taxonomy Classification

6.00 Evaluation

6.10 Judgments in Terms of Internal Evidence

6.20 Judgments in Terms of External Criteria

Source: B.S. Bloom et al., *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: The Cognitive Domain* (New York: Longmans Green, 1956).

Appendix 6. Objectives/Methods Matrix

Table 6A. An Objectives/Methods Matrix, Showing Estimated Appropriateness of Each Major Educational Method for Each Category of Objectives

		Teaching methods				
		Lecture	Discussion	Individual	Humanistic	Classroom
Category of educational objectives						
Cognitive						
1.	Knowledge	B	C	A	C	B
2.	Comprehension	B	B	A	C	B
3.	Application	C	A	A	B	B
4.	Analysis	C	A	A	B	B
5.	Synthesis	C	A	A	B	B
6.	Evaluation	D	A	C	B	B

Table 6A. (*cont'd*)

		Teaching methods				
		Lecture	Discussion	Individual	Humanistic	Classroom
Category of educational objectives						
Affective						
1.	Receiving	B	A	A	A	B
2.	Responding	D	A	B	A	B
3.	Valuing	B	A	D	A	B
4.	Organization of value	B	B	D	A	B
5.	Characterization by value	D	B	D	A	B
Psychomotor						
1.	Gross body movements	D	D	A	C	D
2.	Finely coordinated movements	D	D	A	C	D
3.	Non-verbal communication sets	D	B	C	A	B
4.	Speech behaviours	D	A	C	B	B

A = excellent; B = good; C = fair; D = poor

Appendix 7. Objectives/Evaluation Matrix

Table 7A. Recommendations on the Use of Evaluation Methods to Assess Domains of Competence

Competence/skill	Method								
	Global ratings	MCQ	MEQ	PMP	“Cambridge case”	Standardized patient	Patient rating	Direct observation	Mechanical simulation
1. Knowledge		++	++	+		+		+	
2. Interviewing/interpersonal						++	++	++	
3. Data gathering history			+	+	+++	+++		++	
4. Physical exam. (technical)						+++		++	
5. Reasoning/diagnosis		+	+	+	++	+		+	
6. Lab. utilis./management	+	+	+	++					
7. Personal qualities	++								
+ = of some use		+++ = of most use							

+ = of some use +++ = of most use

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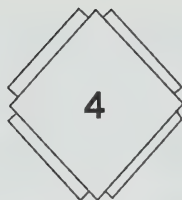
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Legislation, Inquiries, and Guidelines on Infertility Treatment and Surrogacy/Preconception Contracts: A Review of Policies in Seven Countries

Linda S. Williams



Executive Summary

This paper provides an overview of policies regarding regulation of *in vitro* fertilization (IVF), donor insemination (DI), and surrogacy/preconception contracts in seven countries: Australia, Canada, France, Germany, New Zealand, the United Kingdom, and the United States.

The review of each country's policies includes (1) an overview of current legislation; (2) a description of relevant reports of governmental and other inquiries; (3) regulatory guidelines proposed by governmental, medical, scientific, religious, and feminist/women's organizations; and (4) reactions to existing and proposed legislation by each of the above-mentioned groups.

Part 1 describes international regulatory trends concerning these new reproductive technologies (NRTs) in the countries examined. A list of documents examined is provided in a summary legend, and the policies contained in these documents are summarized in an accompanying grid.

Throughout this overview, common regulatory trends are identified. In the area of IVF, for example, international debate focusses on

questions of access to technology, freezing and disposal of eggs and embryos, gamete and embryo donor issues, recipient/donor anonymity and identification, embryo research, the status and ownership of gametes and embryos, and the licensing of IVF practitioners.

Regulatory trends in DI include debate concerning access, filiation of the child, medical screening of donor semen, donor anonymity and identification, and regulation of the technological practices and procedures.

In the area of surrogacy/preconception contracts, there is a strong international trend toward prohibiting payment of a fee to a woman to be artificially inseminated, bear a child, and give it up to the sperm donor for adoption.

Part 2 describes the development of legislation, inquiries, and guidelines in each country and outlines the current state of regulation of each technology. This section also describes the reaction of women's, medical, and religious groups to national regulations.

The goal of this paper is to assist the Commission in its task of producing policy recommendations for Canada. It is not intended to provide a detailed analysis of the policy environment within each country examined or an in-depth examination of any specific document.

Introduction

This report provides an overview of the policies put forward in seven countries to regulate *in vitro* fertilization (IVF), donor insemination (DI), and surrogacy/preconception contracts. It is meant to aid the Commission in producing Canadian policy recommendations and is not meant to be a detailed analysis of each country's policies or of the documents examined. The countries considered are Australia, Canada, France, Germany, New Zealand, the United Kingdom, and the United States.¹ The documents examined include legislation, inquiries, and guidelines/reports.

Part 1 describes the regulatory trends in IVF, DI, and surrogacy in each country. It also contains summary policy grids and a list of documents analyzed in the grids.

Part 2 describes the development of the legislation, guidelines, and inquiries in each country and outlines current regulation of each technology in each country. It also describes the reaction of women's groups, physicians, and religious groups to such regulation.

1. Regulatory Trends

Overview of Regulatory Trends

Regulatory Trends in In Vitro Fertilization

Access

The debate concerning access to IVF has focussed on social and medical criteria. The legislation and inquiries examined in this report generally do not discuss the medical indications for access to IVF. Instead, they focus primarily on the social criterion of the marital status of women seeking IVF. The guidelines and regulations produced by medical bodies usually discuss medical indications for IVF; however, these criteria will not be discussed in this report.

Most documents refer to "couples" when discussing access to IVF, adding that "common-law couples" and those in "*de facto* relationships" or "stable domestic relationships" also can use this technology. No document requires that couples be legally married to use IVF. It is unclear, however, whether these documents seek to exclude single women without partners from using IVF by referring to "couples" or whether their authors assume that the nature of IVF automatically makes it a "couples" technology and, thus, single women do not need to be considered in terms of access. Generally, those documents that specifically exclude single women state it is in the child's best interests to have two parents. Clearly, such documents assume that the traditional two-parent family is required, and children raised only by a mother will be disadvantaged.

The document that best captures the social and legal complexities of the access issue is the 1991 report of Australia's National Bioethics Consultative Committee, *Access to Reproductive Technology* (Australia, Inquiry No. 9, indicated by either a 9 or a double dagger in the summary grid). This inquiry does not specify what social criteria may exclude women from IVF, but it explicitly states non-medical or social restrictions are acceptable since they reflect "current community values and attitudes about family formation" (Australia, Inquiry No. 9, 43). This inquiry also states exclusionary criteria should be reviewed to determine whether they contravene anti-discrimination legislation. This proviso is particularly relevant to Canada, since the Canadian Human Rights Act of 1976-77 prohibits discrimination on the basis of marital status in the provision of services.

Freezing and Disposal of Eggs and Embryos

The trend in the countries examined is to permit egg and embryo freezing, but most documents specify this is to be permitted only for a specified time. Far more attention is paid to the issue of freezing embryos than to the freezing of eggs. Most documents specify the period that embryos may be frozen, ranging from 2 to 10 years. Australian legislation and inquiries and German and U.K. guidelines specify freezing may be

carried out only to allow for later implantation of embryos. Most documents specify that the couple whose gametes make up the embryo must grant permission before freezing can occur, and control remains with them while the embryo is frozen. All documents clearly have the purpose of preventing the stockpiling of eggs and embryos.

Gamete and Embryo Donor Issues

The trend is to allow the use of donor gametes in IVF only if medically necessary, for example, if a woman cannot produce eggs or a man cannot produce sperm. Clearly, the intent is to discourage gamete donation for non-medical reasons. Donor screening is given less attention in documents on IVF than in those on DI.

As shown in the summary grid, the woman and her male partner are to be considered the legal parents of any child produced through IVF using donor gametes. This is identical to the situation in DI; however, unlike DI, consent of the male partner of a woman who receives a donor egg usually is not required or recommended.

Some documents also specify that donor gametes must come from a single donor; that is, only one woman may donate eggs for a single pregnancy attempt and only one man may donate sperm. This requirement/recommendation is designed to allow for exact determination of the child's genetic parentage if non-identifying or identifying information on the donor(s) is recorded. (This issue is discussed further in the section *Recipient/Donor Identification Issues* below.)

Donor payment for gamete donation in IVF is treated the same way as in DI. The trend is to allow donors to be compensated only for expenses connected with donation. The buying and selling of human gametes is discouraged.

The trend is to allow embryo donation in cases of medical necessity. Other issues in embryo donation are treated in virtually the same way as those concerning gamete donation outlined above.

Recipient/Donor Identification Issues

Most documents require or recommend that gamete or embryo donors in IVF remain anonymous, but records of their identities be kept. The trend is to provide non-identifying information to the child and its legal parents. Two Australian inquiries also recommend that the donor be provided with non-identifying information. Some documents that require or recommend donor anonymity also state donors or recipients may choose to release identifying information to the recipient or donor, either at the time of donation/receipt or when the child reaches the age of majority.

These documents attempt to balance the desire of most parents to present the child as their biological offspring against the child's need to know its social origins or medical background. The donor's need to know about the child is sometimes but less often recognized. These competing

needs are balanced by allowing the release of non-identifying information or allowing the parties to choose whether to release identifying information.

Three Australian inquiries and legislation from the Australian state of Victoria buck this trend by stating that gametes from donors whose identity is known to the recipient may be used.

Embryo Research

None of the documents examined prohibits research on human embryos; however, such research is strictly regulated. Usually, embryo research is restricted to licensed practitioners or facilities, must be approved by a regulatory body, or both. Further, most documents specify that research is to be undertaken to improve the fertilization or implantation of embryos, that is, to improve the chances of success in IVF either for a specific couple or for the procedure in general. The time frame for embryo research usually is specified as the first 14 days of embryonic life. These documents clearly discourage research that attempts to manipulate the embryo for other purposes (genetic engineering). This interpretation is supported in that most documents also state that embryos experimented upon may not be implanted in a woman's uterus. Another trend is to state that embryos cannot be produced solely for research: research is to be carried out only on "excess" embryos produced through IVF. A few documents also state "destructive embryo research" is not permitted; however, this phrase is never defined nor are its implications delineated.

Status/Ownership of Gametes and Embryos

The commodification of human gametes and embryos generally is prohibited by the legislation, inquiries, and guidelines/regulations examined; however, few documents actually address this issue.

Much public controversy surrounding new reproductive technologies (NRTs) has focussed on the status of the embryo. (Is it a human being? Should experimentation be permitted?) Most inquiries and guidelines/regulations examined mention the embryo is a potential human being and must be treated respectfully; however, only the U.S. state of Louisiana in its *Revised Statutes* specifically states that the unimplanted embryo is a juridical person.²

Regulation

Most documents examined require or recommend the licensing or overseeing of IVF by a specific official body. Many documents also recommend empowering these bodies to close a facility that acts improperly.³ Legislation from the U.S. state of Louisiana is unique in specifying IVF clinics must meet professional standards set by the American Fertility Society and the American College of Obstetricians and Gynecologists. This requirement means the practice of IVF is regulated by those who stand to benefit from it professionally and is not overseen by any disinterested authority.⁴

The U.S. states of Maryland and Massachusetts require that IVF be included in group insurance policies that cover pregnancy benefits.⁵

Regulatory Trends in Donor Insemination

Access

The debate concerning access to DI also has centred around the marital status of the prospective mother, but it has been much more active than that concerning IVF due to the simple nature of DI. That many women locate sperm donors outside the medical system and successfully self-inseminate has brought the issue of marital status to the fore.

As with IVF, most documents dealing with this issue state so-called common-law couples are acceptable candidates for medically controlled DI. Some documents specifically exclude single women; others explicitly include them. Again, this exclusionary provision must be weighed against anti-discrimination legislation in each country as well as prevailing moral standards concerning family formation.

Filiation of the Child

Amazing uniformity is found in those documents concerning the filiation of the child (the adjudication of paternity). All documents that deal with this issue state a child born through DI is the child of the mother and her male partner, whether their relationship is legal or common law, as long as the partner consents to the procedure. In some documents, this consent is assumed but is rebuttable. (See the section *Counselling/Consent Issues* below.) Some documents also state the sperm donor has no parental rights or obligations toward the child.

Medical Screening

Canadian inquiries and guidelines/regulations lead the way in recommending or requiring that donor sperm be medically screened. This requirement also is legislated in at least three U.S. states. The issue of use of frozen versus fresh sperm is emerging due to safety considerations, such as the presence of the acquired immunodeficiency syndrome (AIDS) virus. The trend is to prohibit the use of fresh semen.

Counselling/Consent Issues

The consent of the woman's male partner generally is required for medically controlled DI, but some documents assume consent which later may be rebutted. An Australian inquiry and the Canadian Fertility and Andrology Society's DI guidelines also recommend obtaining the consent of the donor's wife. This is a requirement in France.⁶

Australian inquiries are especially concerned with counselling for both donor and recipient. No document recommended or required counselling for the donor's partner.

Identification Issues

As with IVF, the trend is toward recommending donor anonymity; however, documents that do not follow suit tend to recommend non-identifying donor information be made available to the child or its parents, and that non-identifying child information be made available to the donor. Some documents also suggest donors and recipients should have the option of releasing identifying information either at the time of donation or when the child reaches the age of majority.

Most documents recommending donor/recipient anonymity also suggest parents tell their offspring about their DI origin. In general, the trend seems to be toward more openness about DI, even if this trend does not extend to total openness concerning the donor or recipient's identity. (Note: Sweden deals with the issue of donor anonymity in unique fashion. See Appendix 1 for a description of Swedish legislation.)

Regulation

Several trends are evident in the regulation of DI. Detailed recording of the identity of donors, their physical characteristics, ethnicity, and medical history, and the recipient's identity increasingly is recommended. The intent is to allow for the linkage of donor and offspring in case of an inherited health problem or to provide identifying or non-identifying information to the parties. To guarantee that the identity of the child's biological father can be determined, some documents specify sperm from only one donor should be used for each insemination attempt.

Some documents specify DI should be performed only by licensed physicians, in approved facilities, or by licensed medical practitioners — an attempt to exclude non-physicians from practising DI. Only one Canadian inquiry specifically states non-medical practice is permitted.

As for IVF, the trend is to allow donor reimbursement only for expenses related to donation. The intent is to prevent the selling of sperm for profit.

Some documents also limit the number of children or pregnancies that can be produced by a single donor to reduce the risk of marriage between half-siblings.

Australian legislation and U.S. legislation also specify criminal penalties for donors who knowingly fail to reveal infectious diseases or genetic conditions, or that they have tested positive for the human immunodeficiency virus (HIV) when being screened as possible donors.

Regulatory Trends in Surrogacy (Preconception Contracts)

Commercial surrogacy is defined in this report as the payment of a fee to a woman to be artificially inseminated with a man's sperm, to bear the child, and to give up the child to him for adoption.

The obvious intent of all documents analyzed is to discourage or criminalize this practice. This is done primarily by stating it is or should be illegal to advertise for a surrogate or act as a surrogacy-contract broker. Most documents also state the contract is or should be legally

unenforceable. Legislation that criminalizes this practice also provides penalties for those who act as surrogacy brokers. Most documents take pains not to penalize the contract mother, but focus on sanctions for those who solicit surrogates or arrange surrogacy contracts.

Three documents permitting commercial surrogacy (see the summary grids, under *Contract Motherhood (Surrogacy)*) do so only under specific conditions. Among the requirements: the contract must be approved by a regulatory body; the practice must be medically necessary, such as when the contracting father's spouse is unable to bear a child; and the contract mother and the contracting parents must receive counselling.

In Canada, the Combined Ethics Committee of the Fertility and Andrology Society and the Society of Obstetricians and Gynaecologists takes the middle ground. This committee specifies surrogacy is acceptable for medical reasons only, but the contracting mother may be reimbursed only for pregnancy-related expenses.

The only document analyzed stating commercial surrogacy contracts should be legally enforceable is the Ontario Law Reform Commission's 1985 *Report on Human Artificial Reproduction and Related Matters*.

Most documents do not discuss IVF surrogacy, that is, surrogacy in which the woman bears a child produced with an egg not her own through IVF; those that discuss this form of surrogacy are included in the last row of the grid.

Summary Grids

Introduction

The summary grids for each technology were developed by consulting the literature for the titles of existing legislation, guidelines, and inquiries and through extensive consultation with international experts.

The countries examined are listed in alphabetical order across the top of the grids. Within each country, inquiries (Inq.), legislation (Leg.), and guidelines/reports (G/R) are listed by numbers corresponding to the documents listed in the grid legend.

Inquiries include all extensive public inquiries containing public policy recommendations developed through a process of collective debate. These inquiries may or may not have included public input.

Legislation includes legislation regulating any or all of the technologies examined in this report.

Guidelines/reports include regulatory guidelines and reports published by professional organizations, such as medical associations and licensing boards.

The summary grids include only those points specifically mentioned in the documents. They do not deal with issues not mentioned. For example, Australian Inquiry No. 2 specifies common-law couples should be permitted access to IVF; however, it does not specify whether single women should or should not be permitted access. Thus, it should not be assumed

that single women are excluded under the recommendations of that inquiry. They simply are not mentioned.⁷ Similarly, Australian Legislation No. 3 states egg freezing is permitted, but it does not mention whether embryo freezing also should be permitted. Thus, it cannot be assumed that embryo freezing is either permitted or prohibited by that document.

Scientific progress in NRTs is rapid. The authors of these documents could comment only on existing technological possibilities in their countries at the time of their deliberations. Consequently, some points may not be mentioned in documents written in the early or mid-1980s simply because these developments were not scientifically feasible at that time or had not become part of common reproductive technology usage in a particular country. For example, most documents regulating preconception contracts do not discuss the desirability of a woman carrying an embryo produced with a donor egg (IVF surrogacy) because they were written before this practice began.

The following abbreviations are used in the summary grids:

1. Req'd/rec'd = required/recommended. Used to recognize that the grids refer to legislation *requiring* certain regulatory practices and inquiries and guidelines that can only *recommend* certain regulatory practices
2. Recip. = recipient
3. NI info. = non-identifying information
4. I info. = identifying information
5. IVF surrogacy = surrogacy arrangement in which the contracting mother bears a child that is the product of a donor egg obtained through IVF
6. Insurance coverage req'd = insurers legally required to provide IVF coverage for policy holders with pregnancy-related insurance coverage

In Vitro Fertilization

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Access									
Couples only (single women excluded)	4, 6, 7, ‡	3	—	6	—	—	3, 4	—	2
Common-law couples acceptable	4, 5, 6, 7, ‡	2, 3, 5, 6, 7, 8	—	7	—	—	3	—	2
Legal marriage req'd	‡	—	—	—	—	—	—	—	—
Single women acceptable	‡	—	—	4	—	—	—	—	—
Counselling req'd/rec'd	4, 6, 7, ‡	3	—	—	—	—	—	—	—
Freezing or Disposal									
Egg freezing permitted	3, 7	3	1	6, 7	—	—	3	—	1
Embryo freezing permitted	3, 4, 5, 7, 8	6	1	2, 4, 6, 7, 8	—	—	3	—	1, 2
Embryo freezing permitted only for later implantation	—	3, 8	—	—	—	—	—	—	—
Egg disposal permitted	—	6, 8	—	—	—	—	—	—	—
Embryo disposal permitted	—	8	—	—	—	—	—	—	—
Gamete Donor Issues									
Gamete donation permitted	1, 3, 4, 6	2, 6, 7, 8	1	6, 8	—	—	3	—	1, 2
Gamete donation permitted only if medically necessary	5, 6	3, 6, 8	—	—	—	2	—	—	1, 2

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
1	—	1	—	—	—	2	—	—	—	—	—
1	—	—	—	—	—	—	—	1	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	2	—	—	—	—	—
—	—	—	—	—	2	—	2	—	—	—	—
—	—	—	—	—	—	—	2	—	—	1	1
—	—	—	—	—	2	—	2	2	—	1	1
1	—	1	—	—	—	2	—	1	—	—	—
—	—	—	—	—	—	—	2	—	—	—	—
—	—	—	—	—	—	—	2	—	—	—	—
1	—	—	—	1	—	—	2	1, 2	—	—	1
—	—	1*	—	—	—	1	—	—	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Gamete donation by minors prohibited	4, 5	—	—	—	—	2	—	—	—
Penalty for donors who supply misleading information	8	—	—	—	—	—	—	—	—
Donor screening req'd	—	—	—	4	—	2	—	—	1, 2
Consent of recip.'s spouse assumed, but rebuttable	—	2, 5, 7	—	4	—	—	—	—	—
Consent of recip.'s spouse req'd/rec'd	—	—	—	7	—	—	—	—	—
Recip. and spouse are legal parents	1, 3, 4, 5, 7	1, 2, 5, 7	—	4, 7, 8	—	—	3, 4	—	—
Consent of donor's spouse req'd/rec'd	5	3	—	7	—	—	—	—	1
Counselling for recip. req'd/rec'd	1, 3, 10	3	—	—	—	—	—	—	—
Counselling for spouse req'd/rec'd	1	3	—	—	—	—	—	—	—
Counselling for donor req'd/rec'd	1, 3, 4, 6, 10	3	—	—	—	—	—	—	—
Counselling for donor's spouse req'd/rec'd	—	3	—	—	—	—	—	—	—
Donor payment permitted for expenses only	4, 5, 7, 8	3, 8	—	4	—	2	3	—	—

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	2	—	—	—	—	—
—	—	—	—	—	—	—	—	2	—	—	—
—	—	—	—	1	—	2	2	—	—	—	—
—	—	—	—	—	—	1	—	—	—	—	—
—	—	—	—	1	—	1, 2	2	1	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	2	2	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	2	1	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Gamete(s) from one donor only	4, 5	8	—	—	—	—	—	—	2
Embryo Donor Issues									
Embryo donation permitted	3, 4, 6	7, 8	—	4, 8	—	—	3	—	1, 2
Embryo donation permitted only if medically necessary	5	3	—	—	—	2	3	—	1, 2
Embryo may not be produced solely for donation	—	—	—	6	—	—	—	—	1
Embryo donation prohibited	—	—	—	—	—	—	—	—	—
Recip. and spouse are legal parents	3, 4, 6, 7	1, 2	—	4, 7, 8	—	—	3, 4	—	2
Donated multiple embryos must come from same donor	4, 5	8	—	—	—	—	—	—	—
Screening of donors req'd	—	—	—	—	—	2	—	—	1
Consent of recip.'s spouse req'd/rec'd	—	3	—	7	—	—	3	—	—
Consent of recip.'s spouse assumed, but rebuttable	—	2	—	4	—	—	—	—	—
Consent of donor's spouse req'd/rec'd	—	3	—	—	—	—	3	—	—
Counselling for recip. req'd/rec'd	3, 10	3	—	—	—	2	—	—	—
Counselling for recip.'s spouse req'd/rec'd	—	3	—	—	—	—	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/F
Counselling for donor req'd/rec'd	3, 4, 6, 10	3	—	—	—	2	—	—	—
Counselling for donor's spouse req'd/rec'd	—	3	—	—	—	—	—	—	—
Donor payment permitted for expenses only	4, 7	3, 8	1	4	—	—	—	—	—
Recipient/Donor Identification Issues									
Donation record keeping req'd/rec'd	1, 3, 5, 6, 8	6, 8	—	7, 8	—	2	—	—	—
Recip./donor anonymity req'd/rec'd	6, 7, 8	6, 8	—	4, 7	—	—	2, 3, 4	—	1, 2
NI info. available to child	4, 7, 8	8	—	—	—	2	—	—	—
I info. available to child	1	—	—	—	—	—	—	—	—
NI info. available to parents	4, 5, 8	8	—	—	—	2	—	—	—
NI info. available to donor(s)	4, 8	—	—	—	—	—	—	—	—
Use of gamete(s) from known donor(s) permitted	4, 5, 8	3	—	—	—	—	—	—	—
Donor(s)/recip. may consent to release I info.	4, 7, 8	6, 8	—	—	—	2	—	—	—
**Two-option system	3	—	—	—	—	—	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Embryo Research									
Embryo research permitted	2, 4, 6, 8	8	1, 2	2, 4, 7, 8	—	—	3, 4	—	—
Only by licensed practitioners/centres	6, 8	6	—	4, 8	—	—	—	—	—
Embryo research permitted only on fertilization/implantation process	—	3	—	7	—	—	—	—	—
Embryo cannot be produced solely for research	1, 4, 5, 6	—	—	2, 7	—	—	3, 4	—	—
Embryos may be produced solely for research	8	—	—	—	—	—	—	—	—
Destructive research not permitted	2	3	—	—	—	—	—	—	—
Status/Ownership of Gametes/Embryos									
Embryos/gametes may be bought/sold under licence	—	—	—	4	—	—	—	—	—
Sale of sperm prohibited	5	8	—	7	—	—	3, 4	—	1
Sale of eggs prohibited	5	8	—	6, 7	—	—	3, 4	—	1
Sale of embryos prohibited	—	8	—	7	—	—	4	—	1
Unimplanted embryo is a juridical person	—	—	—	—	—	—	—	—	—
Couple has parental rights over embryo	—	8	—	—	—	—	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/F
Embryos from dead or missing persons must be used in fertilization experiment or donated	—	3	—	—	—	—	—	—	—
Gametes must be destroyed upon withdrawal of consent of donor or donor's spouse	—	3	—	—	—	—	—	—	—
Regulation									
Regulatory body specified	6, 7, 8, 10	3, 6, 8	—	—	—	—	3	—	—
Authority to close down a clinic	8	3, 6, 8	—	—	—	—	3	—	—
Clinics must meet professional standards	—	—	—	—	—	—	—	—	—
IVF permitted only in approved/licensed facilities	4, 5, 6, 8	3	—	6	—	—	1, 2	—	—
Counsellors must be approved	10	3	—	—	—	—	—	—	—
Approval of counsellors may be changed or revoked	—	3	—	—	—	—	—	—	—
IVF must be last-resort treatment	4, 5	3	—	—	—	—	—	—	—
Clinic records req'd/rec'd	4, 5, 6, 8	3, 6	2	—	—	—	—	—	—
Counselling should be independent of medical unit	1, 5	—	—	—	—	—	—	—	—

In Vitro Fertilization (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Insurance coverage req'd	—	—	—	—	—	—	—	—	—
State funding rec'd/in place	3, 6, 7, 9	—	—	—	—	—	—	—	—
Partial state funding rec'd/in place	—	—	—	6	—	—	2	—	—

- ‡ Inquiry No. 9 does not mention specific criteria, but states non-medical or social restrictions are acceptable; however, exclusionary criteria should be reviewed to determine whether they contravene anti-discrimination legislation.
- * Sperm donation only.
- ** Option 1: Donors and recipients agree all parties (including offspring) have automatic access to identifying information about each other when the offspring reaches age majority.

Donor Insemination

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Access									
Couples only (single women excluded)	3, 6, 7, ‡	3	—	7	—	—	2, 3	—	—
Common-law couples acceptable	5, 6, 7, ‡	2, 5, 6, 7, 8	—	6, 7	—	—	2, 3	—	—
Single women acceptable	‡	—	—	4, 6	—	1	—	—	—

Donor Insemination (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Filiation of Child									
Recip.'s spouse is legal father	5, 7	1, 2, 5, 7	1, 3, 4, 5, 6, 7, 8	—	1, 2	—	3, 4	—	—
Medical Screening									
Donor screening req'd/rec'd	—	—	2	1, 3, 4, 5, 7	—	1, 2	—	—	1
Donor consent for HIV screening not req'd	—	—	—	—	—	—	—	—	—
Use of frozen sperm only	6	—	2	—	—	1, 2	—	—	1
Counselling/Consent Issues									
Counselling req'd/rec'd for recip.	1, 3, 7, 10	3	—	—	—	2	—	—	—
Counselling req'd/rec'd for recip.'s spouse	1, 7	3	—	—	—	—	—	—	—
Counselling req'd/rec'd for donor	1, 3, 4, 10	—	—	—	—	2	—	—	—
Counselling req'd/rec'd for donor's spouse	—	—	—	—	—	—	—	—	—
Counselling must be done independent of medical unit	1, 5	—	—	—	—	—	—	—	—
Consent of recip.'s spouse req'd/rec'd	5, 8	7	—	1, 3, 5, 6	—	1	2, 3	—	—

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
—	—	—	—	1	—	1, 2	2, 3	—	—	B	—
—	—	—	—	—	1	—	—	—	—	C	—
—	—	—	—	—	—	—	—	—	—	D	—
—	—	—	—	—	1	1	—	—	—	E	2
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	1	—	—	—	—	—	—
—	—	—	—	1	1	1	—	—	—	F	2

Donor Insemination (*cont'd*)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Consent of recip.'s spouse assumed, but rebuttable	—	2, 5	—	4, 8	—	—	—	—	—
Consent of donor's spouse req'd/rec'd	8	—	—	—	—	1	—	—	1
Identification Issues									
Donor/recip. anonymity req'd/rec'd	6, 7	6, 8	—	3, 4, 5, 7, 8	—	9	2, 3, 4	—	1
Use of semen from known donor permitted	8	—	—	—	—	—	—	—	—
NI info. available to child	7, 8	3, 8	—	6	—	2	—	—	—
I info. available to child	1, 7*	—	—	—	—	—	—	—	—
NI info. available to parents	8	3, 8	—	6	—	2	—	—	—
I info. available to parents	—	—	—	—	—	—	—	—	—
NI info. available to donor on parents	8	3	—	—	—	—	—	—	—
NI info. available to donor on child	8	3, 8	—	—	—	—	—	—	—
I info. available to donor	—	—	—	—	—	—	—	—	—
Donor/recip. may consent to release I info.	8	3, 6, 8	—	—	—	2	—	—	—
**Two-option system	3	—	—	—	—	—	—	—	—
Regulation									
Regulatory body specified	6, 7	6, 8	—	5	—	1	—	—	—

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
—	—	—	—	—	—	2	2	—	—	G	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	1	1, 2	—	—	—	M	2
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	1	1	2	—	—	—	2
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	2
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	1	2	—	—	—	—

Donor Insemination (*cont'd*)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Authority to close down a doctor/clinic	—	6, 8	—	—	—	—	—	—	—
Approved/licensed facilities/practitioners only	5, 6, 7	8	—	6	—	—	2	—	—
Sperm bank reg./licence req'd/rec'd	5, 6	—	—	—	—	—	—	—	—
Medical practitioners only	5, 8	3	—	4	—	—	2, 3	—	1
Non-medical practice permitted	—	—	—	8	—	—	—	—	—
Use of minor's sperm prohibited	4	3	—	—	—	—	—	—	—
Sperm from one donor only	4, 8	3, 8	2	1, 6	—	—	—	—	—
Records req'd/rec'd	1, 3, 5, 6, 8	3, 6, 8	2	1, 3, 6, 8	—	1, 2	—	—	—
Payment to donor for expenses only	7, 8	3, 8	1	4, 6	—	1, 2	2, 3	1	—
Donor payment prohibited	—	—	—	8	—	—	—	—	1
Limit on number of donations/pregnancies or births/donors	—	—	—	1, 3, 6	—	—	2, 3	—	1
Penalty for donors who knowingly supply misleading information	8	3, 8	—	—	—	—	—	—	—
Counsellors must be approved	10	—	—	—	—	—	—	—	—

Donor Insemination (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
State funding rec'd/in place	5, 7, 9	—	—	—	—	—	—	—	—
Partial state funding rec'd/in place	—	—	—	6	—	—	2	—	—

- ‡ Inquiry No. 9 does not mention specific criteria, but states non-medical or social restrictions are acceptable; however, exclusionary criteria should be reviewed to determine whether they contravene anti-discrimination legislation.
- * Only at age of majority and with donor's consent at time of donation.
- ** Option 1: Donors and recipients agree all parties (including offspring) have automatic access to identifying information about each other when the offspring reaches age of majority.

Contract Motherhood (Surrogacy)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Commercial surrogacy prohibited	1, 5, 6, 7, 8	3, 4, 5	—	6, 7, 8	—	—	1, 2, 4	—	—
Commercial surrogacy acceptable	3	—	—	4	—	—	—	—	—
Approval of regulatory body req'd/rec'd	3	—	—	4	—	—	—	—	—
Only if medically necessary	—	—	—	4	—	2	—	—	—
Payment specified	—	—	—	—	—	—	—	—	—
Acceptable without fee payment	—	—	—	8	—	—	—	—	—

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
—	—	—	—	—	—	1	—	—	—	—	—
—	—	—	—	—	—	—	2	—	—	—	—

Option 2: Donors and recipients agree all parties have automatic access only to non-identifying information about each other. Once offspring reaches age of majority, identifying information can be exchanged between the parties only if they consent at that time.

GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES		
Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
1, 2	—	—	—	—	—	1, 2	1, 2	—	1	**	—
—	—	—	—	—	—	—	—	—	—	**	1
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	1
—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	1	—	1	**	—

Contract Motherhood (Surrogacy) (cont'd)

	AUSTRALIA			CANADA			FRANCE		
	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
Payment permitted for expenses only	—	—	—	—	—	2	—	—	—
Counselling req'd/rec'd for contract mother	—	—	—	—	—	—	—	—	—
Counselling req'd/rec'd for contracting parents	3	—	—	—	—	—	—	—	—
Contract legally unenforceable	1, 3, 5, 6, 7, 8	3, 4, 5	—	7, 8	—	—	1, 2	—	—
Contract legally enforceable	—	—	—	4	—	—	—	—	—
IVF surrogacy included	3, 8	—	—	—	—	—	1	—	—

* Refers only to IVF surrogacy.

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 - (b) *Surrogacy: Background Papers*. Adelaide, 1988; *Surrogacy — Draft Report 1*. Adelaide, 1989; *Surrogacy Report 1*. Adelaide, 1990; *Discussion Paper on Surrogacy 2 — Implementation*. Adelaide, 1990.

4.	GERMANY			NEW ZEALAND			UNITED KINGDOM			UNITED STATES	
	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R	Inq.	Leg.	G/R
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	1, 2	1, 2	—	—	**	—
	—	—	—	—	—	—	—	—	1	**	—
	1, 2	1*	—	—	—	—	1, 2	—	—	—	—

See "State Laws on Surrogate Motherhood, 1990" in grid legend.

4. Reports of the Committee to Consider the Social, Ethical, and Legal Issues Arising from *In Vitro* Fertilization (Waller Report):
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 - (b) *Report on Donor Gametes in IVF*. Adelaide, August 1983.
 - (c) *Report on the Disposition of Embryos Produced by In Vitro Fertilization*. Adelaide, August 1984.
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Legislation

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2. Victoria. Status of Children (Amendment) Act 1984.
3. Victoria. Infertility (Medical Procedures) Act 1984. Includes 1987 amendments.
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Guidelines/Reports

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 - (a) *Guidelines for Ethics Committees for Centres Offering Assisted Reproduction*. London, 1989
 - (b) *Guidelines for Both Clinical and Research Applications of Human In Vitro Fertilization*. London, 1989
 - (c) *IVF Research in the U.K.: A Report on Research Licensed by the Interim Licensing Authority for Human In Vitro Fertilisation and Embryology*. London, 1989
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2. Maryland. *Law of Maryland*, c. 237, 1985; c. 5 (4774), 1985.
3. Massachusetts. *General Laws*, c. 175, s. 47(h), 1987.
4. Pennsylvania. Abortion Control Act, P.A.C.S.A., title 18, c. 32, s. 3213(e).
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 - (A) New Mexico
 - (B) Twenty-seven states: Alabama, Alaska, Arkansas, California, Colorado, Connecticut, Florida, Georgia, Idaho, Illinois, Kansas, Massachusetts, Michigan, Missouri, Montana, Nevada, New Jersey, New Mexico, New York, Oklahoma, Oregon, Tennessee, Texas, Virginia, Washington, Wisconsin, Wyoming

NOTE: Most states also require insemination be performed by a licensed physician and with the husband's written consent for him to be considered the child's legal father. The most commonly used wording is that found in the Alabama legislation: "If, under the supervision of a licensed physician and with the consent of her husband, a wife is inseminated artificially with semen donated by a man not her husband, the husband is treated in law as if he were the natural father of a child thereby conceived. The husband's consent must be in writing and signed by him and his wife." (*Alabama Uniform Parentage Act*, s. 26-17-21)

- (C) Idaho, Illinois, Indiana
- (D) Illinois, New Mexico
- (E) Louisiana, Michigan
- (F) Twenty-one states: Alabama, Alaska, California, Colorado, Connecticut, Idaho, Illinois, Kansas, Missouri, Montana, Nevada, New Jersey, New York, Oklahoma, Oregon, Tennessee, Texas, Virginia, Washington, Wisconsin, Wyoming
- (G) Arkansas, Michigan, New Mexico
- (H) Illinois
- (J) Twenty-one states: Alabama, Arkansas, California, Colorado, Connecticut, Georgia, Idaho, Illinois, Minnesota, Montana,

- Nevada, New Jersey, New Mexico, New York, Ohio, Oklahoma, Oregon, Virginia, Washington, Wisconsin, Wyoming
- (K) Idaho, Illinois
- (L) Arkansas, Hawaii, Maryland, Massachusetts, Texas
- (M) Fourteen states: Alabama, California, Connecticut, Idaho, Kansas, Montana, Nevada, New Mexico, Ohio, Oklahoma, Oregon, Washington, Wisconsin, Wyoming

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American College of Obstetricians and Gynecologists State Legislative Fact Sheet

State Laws on Surrogate Motherhood 1990

Simple Ban

Arizona, 1989	(All contracts, paid or unpaid; custody to surrogate)
Kentucky, 1988	(Only paid contracts or arrangements)
Louisiana, 1987	(All contracts, paid or unpaid)
Nebraska, 1988	(All contracts; but grants biological father parental rights and responsibilities)

Misdemeanor or Felony Ban

Maryland, 1989	(Only paid contracts; misdemeanor penalties for brokering)
Michigan, 1988	(All contracts; felony and misdemeanor penalties; but see also under "Contracts Requirements Only")
Utah, 1989	(All contracts; misdemeanor penalties)
Washington, 1989	(Only paid contracts; misdemeanor penalties)

Ban, According to the Model Act of the National Conference of Commissioners on Uniform State Laws

North Dakota, 1989	(Enacted Model Act, "Uniform Status of Children of Assisted Conception Act")
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Limited Duration Ban or Moratorium

Indiana, 1988 (Two-year moratorium, pending recommendations of legislative study committee)

Ban in Name Only

Florida, 1988 (Bans contracts but allows "preplanned adoption arrangements" that are voluntary and compensate surrogate for expenses)

Permits and Regulates

New Hampshire, 1990 (Permits the making of contracts under certain circumstances and according to specific requirements/procedures)

Contract Requirements Only

Michigan, 1990 (Clarifies definitions of terms used in surrogate parenting contracts; see also under "Misdemeanor or Felony Ban")

Custody Determination Only

Arkansas, 1987 (Custody is granted to contracting couple)

Adoption Brokering

Maryland, 1989 (Misdemeanor to sell or broker the sale of a child)

Nevada, 1987 (Exempts surrogacy from the ban on payment in connection with adoption)

Study Commissioned by Legislature

Several states

2. The Development of Regulatory Policy

Australia

Federal Initiatives^a

Australian scientists have been at the forefront of the development of IVF since its earliest days. For example, the world's third IVF baby was born in Melbourne in 1980. In 1984, Australia produced several "firsts": the world's first IVF quadruplets and the first births from a donor embryo, donor egg, and frozen embryo. The world's first birth from a frozen egg took

place in Australia in 1986. About 60 percent of all IVF and gamete intrafallopian transfer (GIFT) pregnancies have been produced in Australia; thus, most inquiries and legislation dealt with in this report come from Australia, as the summary grids indicate. It is estimated that Australia has had more public inquiries into these issues per capita than any other country (Kasimba and Singer 1989).

Australia has a federal system of government in which its states are empowered to legislate in health matters. The federal government funds much of the country's medical research through the National Health and Medical Research Council (NHMRC), which issues guidelines for funded projects. Many institutions voluntarily follow its guidelines; however, the NHMRC can force compliance only on funded institutions.

Apart from voluntary or regulated compliance to these guidelines, uniform regulation can be obtained in Australia only through unanimous agreement among the six states, two territories, and the federal government. If and when this agreement is reached, the states and the federal government then may pass uniform legislation on a particular health issue (Kasimba and Singer 1989).

Some parts of the IVF procedure common to other gynaecological procedures have been funded by Australian Medicare since 1985. This was one of the factors that led to the rapid development of IVF in that country (Rutnam 1991). As in Canada, blood and urine tests, ultrasound tests, and other procedures essential but not unique to IVF are covered by public health insurance since they already are among insured benefits. In August 1990, Australia's federal minister for community services and health announced IVF and GIFT would be covered by Medicare (*ibid.*). Public funding for these technologies has been controversial in Australia.

The 1982 NHMRC guidelines for IVF are believed to be the world's first. They endorse use of IVF for infertility treatment and approve embryo experimentation up to 14 days, subject to approval by institutional ethics committees. These guidelines also have been modified to cover new developments, such as fetal tissue research, uterine lavage, and gene therapy.

These guidelines have been viewed as inadequate because the NHMRC cannot enforce them except by withdrawing its research funds. Given public demand for IVF in Australia, most prospective consumers are willing to pay for this service; thus, institutional funding is unnecessary, and the guidelines are almost entirely voluntary. Many Australians were also opposed to the guidelines' endorsement of embryo research and the creation of embryos solely for research purposes.

A private member's bill was introduced to the federal Senate to ban embryo research in 1985. This led to the establishment of the Senate Select Committee on the Human Embryo Experimentation Bill and publication of *Human Embryo Experimentation in Australia* (Tate Report) in 1986. This inquiry supported the banning of embryo research but rejected the idea of doing so through a criminal statute. The committee called for

more national restrictions on embryo experimentation through the licensing of IVF clinics. This recommendation also was supported by the Family Law Council's 1985 report, *Creating Children: A Uniform Approach to the Law and Practice of Reproductive Technology in Australia* (Asche Report). No national regulatory system is now in place.

State Initiatives

From 1982 to 1984, all Australian states established inquiries into NRTs, and these are included in the summary grid. Since there is no federal legislation governing the practice of these technologies, the state legislatures have passed bills to fill this void. The most wide-ranging of these is Victoria's Infertility (Medical Procedures) Act 1984, based on the Waller Report. It is believed to be the world's first piece of legislation to regulate IVF, but it also deals with DI and surrogacy. The act permits embryo research on the fertilization process if it is approved by the Standing Review and Advisory Committee, but confusion concerning the definition of "embryo" led to problems in obtaining research approval. The act was amended in 1987 to allow approved research on embryos up to the point of syngamy, defined in the act as the point when the pronuclei of the egg and sperm fuse. It occurs approximately 22 hours after the sperm enters the egg (Ewing 1990a).⁹

As a follow-up to the 1984 law, Victoria passed the Infertility (Medical Procedures) Regulations 1988, specifying the content of counselling for infertility patients and the collection and management of gamete donor information. It is believed Victoria is the only jurisdiction to legislate these matters in such detail.

In spite of substantial state legislation, there remains a strong demand for national regulatory standardization of these technologies. It is generally recognized that differences in state regulations inevitably will lead to "border hopping," as clients and doctors move to jurisdictions that permit the service or research they wish to receive, supply, or undertake.

Joint Federal and State Initiatives

In response to this expressed desire for national standards, Australia's federal and state governments established the National Bioethics Consultative Committee (NBCC) in 1988 to advise both levels of government on bioethical issues. Its reports are included in the summary grid. It is most famous for its surrogacy report, which will be discussed below.

In 1991, the roles of the NHMRC and the NBCC were reviewed. Federal Minister for Health, Housing and Community Services Brian Howe merged the two committees into a new national committee to deal with health ethics within the NHMRC. This new committee is called the Australian Health Ethics Committee. It advises and recommends on legal, ethical, and social issues in health care; develops appropriate ethical guidelines; promotes community debate; monitors the work of institutional ethics committees and international developments in health issues; and acts as a liaison with appropriate groups and individuals. This committee

is chaired by Robyn Layton, who chaired the NBCC from 1988 to 1991 (Australian Health Ethics Committee 1991).

Overview of Inquiries and Legislation

Government inquiries and legislation on NRTs have focussed on legal and ethical issues. The broader social and economic issues that are part of this Commission's mandate, such as health care priorities, women's reproductive health needs, and the medicalization of reproduction, generally are not discussed.

Australia's federal and state governments accept IVF and DI as legitimate infertility treatments; however, there is no consensus on the desirability or extent of public funding, embryo experimentation, eligibility criteria, mandatory counselling, and availability of donor information to the children born of donor gametes.

By and large, Australian inquiries and legislation have not dealt with gene therapy, fetal surgery, judicial intervention in pregnancy, fetal tissue use, sex selection, and prenatal diagnosis (PND) — all issues within this Commission's mandate.

Many recommendations made by inquiries have been justified as representative of "community standards"; e.g., the recommendation of some bodies that single women should not be permitted to use these technologies. In fact, little attempt has been made to determine actual community standards.

Despite these important gaps, the sheer volume of Australian inquiries and legislation has made them highly influential worldwide.

In Vitro Fertilization and the Response of the Medical Profession¹⁰

As outlined above, the NHMRC established IVF guidelines in 1982; however, that committee could enforce them only by withholding funding. Some professional groups have required adherence to the NHMRC guidelines even for research not funded by the NHMRC; however, most professional groups favoured mandatory licensing for infertility clinics to protect themselves and the public. The Fertility Society of Australia established its own Reproductive Technology Accreditation Committee (RTAC) in 1988 to license clinics that provide IVF, GIFT, ovum and embryo donation, DI, and associated technologies. RTAC also drew up a set of standards for personnel, procedure, and equipment. As far as ethical issues are concerned, the guidelines state

IVF, whether therapeutic or experimental must only be practised within the ethical guidelines established by the NHMRC. In addition, every IVF programme must have all aspects of the programme monitored by the Ethics Committee of the hospital or the institution concerned and conform to the regulations laid down by individual State legislation. (Fertility Society of Australia 1988, 4) (See Australia, Guidelines/Reports No. 2 in the summary grid)

While RTAC is not a legal body — clinics theoretically can practise without accreditation — the lack of accreditation or its loss can be detrimental to a facility. Accreditation is for one to three years and is subject to regular review. Lists of accredited clinics are published, and unaccredited clinics may be refused free drug supplies from the health department (Austin 1989). Some doctors also may be reluctant to refer patients to unaccredited clinics.

Aside from these professional guidelines, IVF practitioners also are governed by existing state legislation.

The medical profession also has been active in efforts to obtain Medicare funding for IVF and related procedures. This was obtained in 1990. (See *Federal Initiatives* above.)

IVF physicians and scientists have been frustrated by government controls on embryo experimentation, especially in Victoria. Australia's most prestigious IVF clinics are located in Melbourne, the state capital. Frustration with the slowness of Victoria's Standing Review and Advisory Committee to approve embryo research projects has led to the shifting of at least one of these experiments to another state without regulations (Ewing 1990a). Australian IVF doctors also have stated they might leave the country if the research climate became too restrictive, but this exodus has not materialized.

Donor Insemination and the Response of the Medical Profession

As in other countries, DI has received less attention in Australia than either IVF or surrogacy. The RTAC guidelines described above recommend practices for the selection of semen donors and the recording of donor and recipient information, but they are concerned mainly with the more "technological" practices, such as IVF, GIFT, and embryo donation. These guidelines do not apply to sole practitioners working from their own offices; however, these practitioners are most likely to engage in unethical DI practices.¹¹

A number of states have legislation that governs DI, and this is included in the summary grid.

Surrogacy

Australian inquiries and legislation are almost unanimous in condemning commercial surrogacy. This is done through prohibiting the procurement of a contract mother and declaring that surrogacy contracts should be considered unenforceable, in the case of inquiries, or are unenforceable, in the case of legislation.

An exception to this almost unanimous disapproval of surrogacy is the series of NBCC reports (see Australia, Inquiry No. 3 in the summary grid). These inquiries state traditional and so-called IVF surrogacy are acceptable if approved by a state-licensed, not-for-profit agency, although they should not be legally enforceable.

The agency's role would be to advertise the service, provide information and mandatory counselling to all parties, determine the eligibility and

suitability of prospective contract mothers and contracting parents, formulate the final agreement, and keep records. These agencies would not keep lists of potential contract mothers or contracting couples or try to match up these parties. The reports suggest community welfare services, family planning associations, reproductive medicine units, Family Court judges, charitable organizations, community health centres, or private medical clinics might make suitable licensing agencies.

These documents further recommend that, once a contract has been signed, a one-month cooling-off period should pass before insemination is attempted. If conception does happen and the birth mother does not file her intention to keep her child within one month of its birth, the contracting couple automatically becomes the child's legal parents.

If the contracting mother decides not to relinquish her child, she will be recognized as its legal mother, but the contracting couple could seek guardianship and custody rights, depending on the contracting mother's marital status. A fee may be paid to the contracting mother, but only through the agency to prevent exploitation.

The rationale behind this qualified support of surrogacy is that women should be free to choose to become contract mothers. Couples have the right to enter into surrogacy arrangements as a legitimate means of overcoming infertility as long as the contracting mother is not exploited (Rowland 1990).

Generally, public response to these inquiries was negative. Religious groups, women's groups (see below), and social welfare groups argued that these proposals do not support the child's best interests and reduce women solely to their reproductive function. They point out that the report leaves many important questions unanswered, such as to what extent can the contracting mother's behaviour be controlled during the pregnancy and what happens if the contracting couple refuse to take the child. A national conference on surrogacy unanimously rejected these recommendations. Federal and state governments also have rejected the reports' recommendations, especially since several states have legislation specifically prohibiting surrogacy. Infertility support groups and IVF practitioners expressed some support for the reports; however, even these groups tended to differentiate between altruistic surrogacy done for a friend or relative without monetary reward and commercial surrogacy.

In conclusion, the NBCC's surrogacy recommendations are not expected to result in regulatory support for that practice in Australia.

Response of Women's Groups

As in most countries, Australian women dealing with infertility tend to be most supportive of NRTs. Groups have formed to lobby and show support for IVF practitioners in their "struggle" with authorities who sometimes are seen as trying to prevent infertile couples from gaining access to technologies that might allow them to conceive.

Feminists have been among the most active groups in the Australian public debate on NRTs. They also have written widely on the international application of these technologies.

In recent years, feminist concern about IVF has focussed on a 1988 paper, *In Vitro Fertilisation in Australia*, prepared by the Commonwealth Department of Community Services and Health. This paper described the experimental nature of IVF, the drugs used in the procedure, and the large amount of public money spent on this technology compared to women's other health needs. Feminists were critical of the NBCC's papers on surrogacy described above.¹² A major feminist criticism of attempts to regulate NRTs in Australia is that legislation is focussed on the rights of embryos and is unconcerned with women's rights or health (Ewing 1990a; Roach 1989).

Response of Religious Groups

Religious groups have been active in the debate on NRTs in Australia. One-quarter of Australia's population is Catholic, and the Catholic Church has opposed embryo research and the use of IVF in general. An official Australian Catholic Church document defining the Church's position could not be found. Thus, it must be assumed that the Church supports the Vatican instruction described in Appendix 2.

The Social Responsibilities Committee of the Anglican Diocese of Melbourne has issued two documents presenting the Church's positions on IVF and surrogacy. IVF is seen as an ethically valid way for infertile couples to have children (part of the purpose of marriage); however, embryos should not be created specifically for research purposes. Research should be performed only on "spare" embryos with the informed consent of the parents and the donors (if any), and only up to the point of syngamy. This last point agrees with Victoria's Infertility (Medical Procedures) Act described earlier.

The above-mentioned document places this technology and its ramifications within the larger context of scientific/medical progress and commercialization of human reproduction. It also mirrors the concerns of feminist critics of IVF with the following statement:

We are concerned that IVF has been a largely male dominated development, and we understand the response of some feminists that women have been used as "living laboratories" for male scientists to express their curiosity about possible developments in artificial reproduction. It is extremely important that the women who are the "patients" have an informed understanding of the complexities of the IVF program, and participate willingly in it. (Anglican Diocese of Melbourne 1990a)

The document also stresses it is important to understand the social pressures that compel women to bear children.

The Anglican Diocese of Melbourne also opposes surrogacy, stating the practice is "akin to slavery" and does not support the child's best interests.

It believes surrogacy contracts should remain illegal. It suggests that while the parties to surrogacy (the contracting mother and couple) should not be subject to criminal penalties, such penalties may be appropriate for surrogacy brokers.

This diocese neither supports nor condemns altruistic surrogacy. It has no primary moral objections to altruistic surrogacy because of the clear motives of those involved; however, concern is expressed regarding the child's identity, the potential myriad relationships, the possible manipulation of women within the context of emotional family relationships, and the problematic distinction between altruistic and commercial arrangements. The diocese's official position is altruistic surrogacy should not be illegal, but it should be discouraged by the community.

When a so-called surrogate birth does occur, the diocese suggests the contracting mother be deemed the child's mother in preference to any other claimant (Anglican Diocese of Melbourne 1990b).

Canada

Federal Initiatives

Like Australia, Canada has a federal system of government, with 10 provinces and two territories. Under the terms of the Constitution, jurisdiction over health matters is shared among the federal, provincial, and territorial governments. In 1982, the Supreme Court of Canada ruled that health matters of a local nature can be legislated provincially, while issues of national importance can be legislated at the federal level. The Canada Health Act, which established national health insurance for all Canadians, gives provinces the right to decide which health services will be insured. Only medically necessary services are eligible for inclusion in a province's list of insured services, but this criterion is open to interpretation.

The definitional question is relevant to infertility treatment: Is infertility a disease, a disability, or simply a *desire* thwarted by biology and fostered by social attitudes toward childbearing and gender roles? These questions have a bearing on the extent to which or, indeed, whether infertility services, including NRTs, will be funded by provincial governments (Canada, Royal Commission on New Reproductive Technologies 1991d).

Canada has no federal legislation dealing with NRTs. Several federal and provincial inquiries have been undertaken, and these are included in the summary grid. Their conclusions are in line with the summary of trends beginning this report, with one notable exception: the Ontario Law Reform Commission's *Report on Human Artificial Reproduction and Related Matters* is one of only two inquiries examined to give qualified approval to the practice of commercial surrogacy.¹³

Provincial/Territorial Initiatives

Only the province of Quebec and Yukon Territory have legislation that directly relates to NRTs.

The Quebec Civil Code, Articles 586 and 588, was the first body of Canadian legislation to deal with the filiation of children born as a result of DI. The child is presumed to be the legitimate child of the spouses if the husband gave his consent to the insemination. The code does not specify that the consent must be in writing or witnessed, but this appears to be implied (Ontario Law Reform Commission 1985, 374).¹⁴

The Yukon Children's Act 1986 states the legal father of a child born through assisted conception techniques¹⁵ is the husband/cohabiting partner of the mother. The sperm donor is not given parental rights. If the mother does not have a partner, then the child has no legal father.¹⁶

This act follows the draft Uniform Child Status Act proposed by the Uniform Law Conference in 1980.¹⁷ This nongovernmental body has members from the private sector, academia, and government. It attempts to standardize legislation across the country by recommending model legislation.

Response of the Medical Profession

As in most countries, the medical profession in Canada has established guidelines for the practice of NRTs. In 1988 the Canadian Fertility and Andrology Society published *Guidelines for Therapeutic Donor Insemination*, which now is being revised.¹⁸ The Canadian Fertility and Andrology Society and the Society of Obstetricians and Gynaecologists of Canada published *Ethical Considerations of the New Reproductive Technologies* in 1990. These guidelines cover IVF, DI, and surrogacy. This document is similar to those produced by the international medical associations examined in this report; however, it takes the unusual position that surrogacy is acceptable "for medical reasons." It falls short of total approval of commercial surrogacy, stating the contract mother should be reimbursed for her expenses only. This document also states ongoing research should be undertaken to "carefully evaluate the impact of surrogacy on all parties involved" (*Ethical Considerations* 1990, 51). (See Canada, Guidelines/Reports Nos. 1 and 2 in the summary grid.)

Currently, most Canadian IVF clinics belong to the Canadian Voluntary Regulatory Association (CVRA) established by IVF practitioners. The purpose of this association is to regulate the practice of IVF in Canada and to set up a central computer registry for clinical data.

Paralleling the establishment of the CVRA, the Independent Health Facilities Act became law in Ontario, the province with the largest number of hospital-based and independent IVF clinics in Canada. The Ontario government asked the provincial College of Physicians and Surgeons to set up facility and practice guidelines for IVF programs. The Obstetrics and Gynaecology Task Force on Independent Health Facilities was established. Part of its mandate is to develop IVF facility standards and practice

guidelines. These guidelines have been developed and accepted by the College of Physicians and Surgeons of Ontario, and preliminary approval has been given by the Society of Obstetricians and Gynaecologists of Canada, the Canadian Fertility and Andrology Society, and the CVRA. Eventually, these guidelines are expected to be used by the Canadian Council on Health Facilities Accreditation to accredit future IVF clinics.¹⁹

Generally, the issue of ovum screening for genetic or other health defects has received less attention worldwide than the medical screening of sperm; however, that is not the case in Canada. The Canadian College of Medical Geneticists is in the process of accepting *Guidelines for Family History Screening of Gamete Donors for In Vitro Fertilization and Donor Insemination*. These guidelines deal with the technical as opposed to the ethical issues of gamete screening. Nevertheless, they are unusual in recognizing the need to screen donor ova and sperm for health defects.²⁰

(This section does not reprise the responses of Canadian women's and religious groups to the regulation of these technologies. These issues were dealt with extensively in the public hearings attended by the Commissioners and in the Commission's 1991 publication *What We Heard*.)

France

Government Initiatives²¹

On 23 February 1983, the French government established the National Advisory Ethics Committee for the Life and Health Sciences (Comité consultatif national d'éthique pour les sciences de la vie et de la santé) (NAEC). Its mandate is to produce opinions on the ethical issues raised by biomedical and health research and to provide information. This permanent committee consists of 37 members appointed for two years. Half the committee is replaced every two years. The opinions of NAEC are not binding, but they are brought to the attention of the ministers of health and research and the public. Members have some legal influence (Law Reform Commission of Canada 1990), and they have been influential on subsequent French regulatory initiatives.

NAEC has produced several NRT-related opinion papers relevant to the Commission's mandate. One of the most general has been included in the summary grid (see France, Inquiry No. 1).

As a permanent structure, this committee can issue opinions as new technological developments occur; however, it is weighted heavily with researchers and may not represent the French public in general. For example, there is no indication that the views of women or infertile people are necessarily adequately represented. There also is no way to judge the degree of dissent (if any) in its published opinions since this is not recorded. NAEC has no legislative or regulatory power; however, it is influential and appears to have an impact on clinical practice.

In January 1985, the government organized a symposium, "Procreation, Genetics and the Law." Later, NAEC underlined the need for

consultation with experts and the public on NRTs and the status of the embryo. The government then commissioned five people to consult with experts and seek public opinion.

Public opinion was garnered by means of opinion polls, and the comments of scientists, practitioners, and other interest groups were also reviewed. Several institutions were consulted, including NAEC. The committee's report includes each of these reviews. The recommendations of this report are included in the summary grids (see France, Inquiry No. 2).

On 19 December 1986, the Conseil d'État was mandated by then-Prime Minister Jacques Chirac to study the legal aspects of scientific research on human beings and its applications relating to the commercialization of human body parts, genetic and embryological research, PND, and the collection, treatment, and preservation of human eggs, as well as the implications of artificial procreation on legislation concerning the filiation of the child and succession law. The council could add other categories as it saw fit. Its overall mandate was to explore a legislative framework that might be used to regulate practitioners and researchers.

The Conseil d'État is a permanent legislative advisory body of the government, with a membership of 300 divided into three sections. Preparation of this report was given to the Reports and Studies section. The report has come to take the name of that section's then-president, Guy Braibant. It is included in the summary grid (see France, Inquiry No. 3).

The report is in the form of draft legislation tabled in Parliament in March 1989. The legislation is wide-ranging; it is thought that its complexity made it impossible to reach a consensus, and it was never passed.

On 8 April 1988, the government issued two orders regulating the activities of French reproductive technology centres. They are known as the Barzach orders, after then-Minister of Social Affairs and Employment Michele Barzach, responsible for health and the family.

Order No. 88-327 outlines the qualifications that physicians must have to be licensed to conduct IVF and freeze gametes and embryos. It also describes the general clinic premises required.

Order No. 88-328 creates the National Commission on Reproductive Medicine and Biology. The order describes the membership of this commission and its functions. Its major role is to monitor the qualifications of the practitioners licensed under Order No. 88-327 and to advise the minister of health, upon request, on PND and medically assisted reproduction. The commission also must report to the minister on developments in reproductive medicine.

In effect, these two orders establish a system for licensing the practice of IVF and DI in France; however, they do not provide means of regulating this practice in licensed centres, or any sanctions for centres or practitioners who breach these regulations. As of June 1991, there were 76 licensed clinics and 81 licensed labs and sperm banks.

Following the failure of the Braibant legislation to become law, the government established a Task Force on Biomedical Ethics and Life Sciences in October 1990. The task force's objectives were (1) to inquire into the major legal aspects and present practice in bioethics and life sciences in France and internationally. The task force also examined Belgium, Canada, Czechoslovakia, Germany, Sweden, the United Kingdom, and the United States, (2) to define a position on biomedical ethics for France which can be integrated into a cooperative international system, and (3) to describe the social impact of biomedicine and determine where the state should intervene. Ten interministerial meetings and 16 public hearings were held in France and elsewhere. The task force met with officials of the European Economic Community, the Council of Europe, and the World Health Organization and with numerous individuals. Meetings were held with doctors and researchers who also provided written submissions.

The recommendations of this report are included in the summary grid (see France, Inquiry No. 4). This report is the latest work to emerge from France and is expected to influence the regulation of NRTs in that country. Some of its findings and recommendations are described in detail below.

The task force found a legislative framework is needed to uphold fundamental principles. The present French licensing system is insufficient insofar as privately funded, unlicensed centres operate without sanction or control. The present licensing system is inadequate because there is no mechanism for controlling licensed centres or for sanctioning unlicensed ones. This task was to be undertaken by the National Commission on Reproductive Medicine and Biology established under Order No. 88-328, but this committee has not been granted the means or power to carry out this mandate.

The task force recommends that the above commission be transformed into a new advisory body, the National Council for Medicine and Research on the Commencement of Life (Conseil national pour la médecine et la recherche sur les débuts de la vie). The task force made detailed recommendations concerning licensing, data collection, and the composition of the new council. Other task force recommendations were expected to lead to the introduction of three bills in Parliament in spring 1992.

Funding for New Reproductive Technologies

The French Constitution recognizes the right to health for French citizens. Medical care is funded by the state through social security. In October 1978, a law was passed stipulating that all costs for the investigation, diagnosis, and treatment of sterility would be covered by social security, including DI costs. In contrast, only 80 percent of the costs of caring for a sick child are reimbursed.

The 1986 *Les procréations artificielles* inquiry (see France, Inquiry No. 2 in the summary grid) recommended 80 percent of the costs of

reproductive technologies be reimbursed by the state's health care system, and the number of attempts at artificial reproduction undertaken at state expense be limited.

The French inquiries seem to agree that use of NRTs is valid for alleviating infertility and thus is a legitimate expense for the French health care system; however, the extent to which these technologies should be made available to those who are not infertile but simply want to have a child has not been decided. The consensus seems to be that access should be limited to infertile heterosexual couples.

In Vitro Fertilization and the Response of the Medical Profession

France has one of the world's highest per capita rates of IVF clinics. In theory, French IVF clinics are licensed under the orders described above; however, the regulatory body does not have the means to sanction improperly operating clinics. Privately funded clinics operate with impunity.

In March 1991, the GEFF published *Livre Blanc des procréations médicalement assistées en France* (see France, Guidelines/Reports No. 2 in the summary grid). GEFF represents all biologists and doctors, in both the public and private sector, who work in IVF centres. The purpose of *Livre Blanc* is to provide statistical information about IVF. It was published because the GEFF became increasingly concerned about the public's growing negative perception of IVF, specifically, its low success rate, dangerous complications, psychological stresses, and the ethical disregard of some practitioners.

This document describes the prevalence of infertility, the medical indications for IVF, and IVF success rates in France. Some comparison is made with other countries. The paper also makes recommendations about the practice of IVF, and these are described in the summary grid under France, Guidelines/Reports.

Clearly, this document is self-serving, since it admittedly was written to inform the public about the "reality" of IVF as seen through the eyes of its practitioners. Ethical issues are not dealt with in any detail, and the paper does not recommend improvements to the French IVF licensing system.

Donor Insemination — Regulation by the Medical Profession

France may have the world's most thoroughly organized DI system. In 1973, the first CECOS (Centre d'étude et de conservation des oeufs et du sperme humains) was established; there now are 20 such centres throughout the country. Ninety percent of all artificial insemination pregnancies in France are achieved through CECOS centres.

The functions of CECOS are (1) to collect, freeze, and test donor sperm, (2) to preserve the sperm of men who are undergoing vasectomy or medical therapy which may destroy or inhibit sperm production, such as radiation or chemotherapy, and (3) to gather data and conduct research into artificial insemination (Fédération CECOS 1991).

CECOS is unique in that all sperm donations must be given voluntarily without payment and the donations must come from a couple who have one or more children (Fédération CECOS et al. 1989, 757). Donations must be anonymous, and only frozen, screened sperm is used. The donor's spouse also must consent to the donation. No donor is used for more than five pregnancies (Fédération CECOS 1991).

This system appears to work well in practice; however, owing to the 1988 orders establishing licensing requirements for artificial reproduction in France, some French sperm banks are licensed by the government but are not CECOS members. It cannot be assumed that these centres conduct their practice according to the high ethical standards of the CECOS centres.²²

Surrogacy

Currently, no specific French law prohibits commercial surrogacy, but a recent Supreme Court case resulted in the practice being declared illegal in May 1991.²³ All French inquiries included in the summary grids also have recommended its prohibition.

Response of Women's Groups

From 1984 to 1989, 12 French opinion polls were conducted to determine public attitudes toward NRTs. In general, these polls show public acceptance of DI and IVF, and "women have become more favourable to these techniques than men, mostly when they have to use them themselves. As a matter of fact, the most constant element of these polls is that women hesitate less than men in their response." Pollsters explain women's greater degree of support for these two interventions as follows: "This question is obviously experienced for women as reflective of their own competence, both because it concerns procreation, and because it is posed more often in moral terms, a realm in which women allow themselves more easily to have an opinion" (Memmi 1989, 28-29).²⁴ Women were more strongly opposed to surrogacy than were men, either in general or to the idea of being a "surrogate mother" themselves (Memmi 1989).

No reply was received to requests to French women's groups for information concerning the attitudes of French women to NRTs; however, the writings of French feminists show these women do not differ from feminist women in other countries in their opposition to these technologies.²⁵

Response of Religious Groups

Catholicism is the dominant religion in France. The French Catholic Church does not appear to have published its own position paper on NRTs; thus, it must be assumed that the French Church's position follows that outlined in the Vatican instruction.

Germany

Government Initiatives

In 1985, the West German government published the report of its Working Group on *In Vitro* Fertilization, Genom Analysis, and Gene Therapy, commonly known as the Benda Report (see Germany, Inquiry No. 1 in the summary grid). This report has strongly influenced the practice of NRTs in Germany. Many of its recommendations were adopted by German doctors in their 1988 guidelines (see Germany, Guidelines/Reports No. 1 in the summary grid).

In 1986, a draft law to regulate embryo research was published, and after several years of debate the German parliament passed the Embryo Protection Act in October 1990. It came into effect on 1 January 1991.²⁶ This act generally is considered to be one of the world's most restrictive and was passed following a year-long debate (*Deutsches Ärzteblatt* 1990).

The act states only three eggs may be fertilized at a time and only three embryos may be returned to a woman's uterus. It also prohibits embryo flushing, surrogacy, cloning, the creation of chimeras, sex selection through the use of sex-typed sperm for DI (with crucial exceptions),²⁷ and the practice of DI by non-physicians.

The act's sections dealing with the treatment of embryos and gametes are its most controversial. Embryos cannot be created for research purposes or used in destructive research. They may be created only to bring about a pregnancy in the woman whose egg is used to create the embryo; however, once embryos are created, they can be frozen. According to two German commentators: "Embryo research may now only be conducted as long as the embryo is not harmed and a clinical pregnancy remains possible throughout or after the study" (Beier and Beckman 1991, 607).

The act's interpretation of "embryo" is broad. The translation found in the *International Digest of Health Legislation* 42 (1) (1991) states:

the term "embryo" means the human egg cell, fertilized and capable of development, from the time of fusion of the nuclei, as well as each totipotent cell removed from an embryo that is capable, in the presence of other necessary conditions, of dividing and developing into an individual. (Embryo Protection Act 1990, sec. 8)

"Totipotent cell" refers to cleavage cells (blastomeres) produced by the developing embryo after fertilization, each of which contains the embryo's genetic information and the capability of developing into a human being under the right conditions. The act also states that for the first 24 hours after the egg and sperm have united the embryo shall be considered capable of development unless the opposite is shown during that period.

In essence, the act considers "developability" to be the major criterion in deciding what biological entities should be protected (Waldschmidt 1991).

This act was passed in German Parliament with the support of the Christian Democrats and the Liberals, but was adamantly opposed by the Green Party (*Deutsches Ärzteblatt* 1990). A former researcher for the Greens in the areas of genetic engineering and reproductive technology has raised the following criticisms of the Embryo Protection Act:

1. This act is part of the German Criminal Code and, as such, must be upheld by the police and the judicial branch. The act does not specify how its provisions will be monitored or enforced. Even if charges are laid (and this would be difficult unless the police are knowledgeable of the details of a scientist's work), prosecution and conviction will be rare due to the difficulty of gathering and presenting complex scientific evidence in court.
2. Under this act, the embryo's need for protection depends on its degree of development, as described above, and this is tied to the degree of embryonic cell division. The purpose of this proviso is to protect biological entities that might become human beings from experimentation or destruction; however, scientists do not agree on when this point is reached in the embryo's development. Some link it to the degree of cell division and some to the start of genetic activity in the fetus. Thus, the notion of developability is tied to a static definition which will doubtlessly change as scientific knowledge progresses. In addition, it is open to interpretation by the very doctors and scientists the law is supposedly regulating.
3. Embryo freezing is not prohibited by this act as long as it is performed by a doctor. This leaves open the possibility of banking embryos for future research.
4. The act permits the genetic manipulation of eggs and sperm *in vitro* as long as they will not be used for fertilization and implantation of the resulting embryo (Embryo Protection Act 1990, sec. 5). This exception opens the door for research on germ line therapy.
5. The act does not clearly define what types of embryo research are acceptable. Destructive research is prohibited, but non-invasive PND is not prohibited; nor is experimentation on dead or non-developing embryos.
6. The act does not prohibit the numbers of eggs that may be removed from a woman's ovaries or frozen. Eggs are an essential "raw material" for reproductive research.
7. Section 3 of the act, which permits sex selection for medical reasons, justifies eugenic selection on those grounds.

In conclusion, Waldschmidt believes the act

makes heavy weather of protecting embryos from the clutches of researchers, [but] dispenses with any kind of control or supervisory mechanisms ... It only half-heartedly bans embryo research while at the same time endorsing reproductive medicine and gamete and germ line cell research, and can only be seen as a compromise between the research lobby and life protectionists ... Basically the new law gives its blessing to what has long since become everyday practice — no more and no less. (Waldschmidt 1991, 219)

In Vitro Fertilization

West Germany began covering IVF under its state health insurance plan in 1985. It was removed in 1989 during a restructuring of the health care system and attendant cost-cutting measures. An intense lobbying effort from doctors and infertile couples led to IVF being returned to the list of insurable benefits in June 1990. The amendment was made retroactive to 1 January 1989. This about-face was justified on the grounds that access to infertility treatment should not depend on a couple's income (Waldschmidt 1991).

In 1988, the Ninety-first German Doctors Congress published "Guidelines for In Vitro Fertilization with Embryo Transfer and Intra-fallopian Gamete and Embryo Transfer as Treatment of Human Sterility." These guidelines take a strict view on the issue of marriage, stating clearly that a *de facto* couple who wish to use this technology should marry, although exceptions will be considered. The guidelines are unequivocal in their rejection of single women. The use of donor sperm also is not favoured, but exceptions can be made in cases of medical necessity. Egg and embryo donation are not permitted.

The practice of IVF in Germany obviously will be affected by the provisions of the Embryo Protection Act, since it specifies the number of eggs that may be fertilized at one time and the number of embryos which may be transferred. This may lead to even lower success rates (live births) than usual with IVF.

Donor Insemination

DI does not appear to be regulated in Germany to the same extent as IVF, surrogacy, or embryo research. The Benda Report did not deal with DI directly, and there do not appear to be any specific regulatory guidelines from the medical profession. It is estimated that more than 500 DI children are born each year (France, Sénat 1991).

Surrogacy

This practice gained much public attention in Germany in 1987 when U.S. surrogacy lawyer Noel Keane attempted to establish a surrogacy agency in Frankfurt. The purpose of this office, which he called United Family International, was to facilitate surrogacy contracts between European couples and U.S. women. For DM 60 000, Keane would find a

suitable U.S. surrogate, supervise the insemination, pregnancy, and birth in the United States, and arrange transfer of the child to the German contracting father and its subsequent adoption. DM 20 000 each would be paid to Keane and the contracting mother, and DM 20 000 for medical fees. This office operated for only a few weeks before it was shut down by a court order brought by the City of Frankfurt. This action was prompted by protests from a coalition of women's groups, political parties, churches, and trade unions. Keane was found in violation of German adoption law, which requires that adoptions can be undertaken only by state authorities (Winkler 1988).

As in other Western countries, some surrogacy contracts have been contested in German courts and all have been declared unactionable. Also, under German law, an unmarried woman receives sole custody of her child and the father has no legal claim. This reality has tended to discourage the development of commercial surrogacy (Winkler 1988).

Surrogacy was effectively banned in Germany in 1989 with amendments to the Adoption Arrangements Act 1976. It made advertising for or procuring a surrogate illegal and provides a penalty of imprisonment for one to three years for the person arranging the surrogacy, depending on the nature of the intervention and whether money changed hands. The contracting mother, father, and/or couple are not punishable.

The prohibition against surrogacy was strengthened by the Embryo Protection Act 1990. That act declares it illegal to remove an embryo from a woman before implantation and to implant it into another woman (embryo flushing). It also prohibits surrogacy through artificial insemination or embryo transfer (IVF surrogacy). Again, neither the contracting mother nor the contracting parents are punishable.

Response of the Medical and Scientific Communities

In 1988, a number of German medical boards and councils published a joint set of guidelines regulating embryo research (see Germany, Guidelines/Reports No. 2 in the summary grid). These guidelines have been superseded by the Embryo Protection Act, but they contain some of the same provisos. The report's tone favours embryo research. Unlike the act, section 4.2 of these guidelines specifies how embryo research is to be monitored and regulated:

Any scientist who wishes to do this kind of research has to hand in an application with a clear statement of research goals to his local ethics commission. At the same time this application goes to the Central Commission of the Federal General Medical Council. (See Germany, Guidelines/Reports No. 2 [section 4.2] in the summary grid)

The duties of the Central Commission are specified, and it is charged with ensuring the guidelines are followed. It is unclear what role this commission will have following passage of the Embryo Protection Act.

In 1988, the Federal General Medical Council produced written comments on the draft bill that eventually became the Embryo Protection

Act.²⁸ Its main point is that professional regulation of embryo research is far preferable to legal regulation. The council proposes to work with state authorities so existing professional guidelines can be approved by the state. The paper states it would be better to see how these guidelines work in practice before a specific addition to the criminal code is considered.

Scientists also have opposed the Embryo Protection Act. The two principal German research organizations supported the spirit of the 1986 draft law that later became the Embryo Protection Act but disagreed with the extent of its restrictions. Like physicians, they wanted medical doctors and scientists to control the regulation of embryo research and opposed its inclusion in the criminal code. These organizations were concerned the law was too strict and inflexible, scientists would be afraid to conduct medically valuable research, and doctors would be forced to practise "defensive medicine." A major concern was the law would be unable to adapt to new research developments as could a panel of scientists. Both organizations noted the proposed law to protect embryos seemed to contradict West Germany's liberal abortion law (Dickman 1987).

With passage of the law, there is concern among the scientific community that German embryo research will be isolated from the rest of the world. Some also feel Germany ultimately will employ a double standard, applying therapeutic techniques developed through embryo research in countries with less restrictive policies (Beier and Beckman 1991). Generally, the medical and scientific communities believe control of this research should rest primarily with them, although they do recognize the need to prohibit extreme practices.

Response of Women's Groups

Feminist resistance to NRTs has been active in Germany. This is true in most Western countries, but German feminist resistance is unique in the extent that it has focussed on genetic engineering, eugenic issues, and population policy within the overall framework of a feminist critique of masculinist science.

The first women's congress against genetic technology took place in Bonn in 1985. Numerous committees and policy groups formed throughout the country, and in April 1987 a nationwide week of action against human genetic counselling was carried out (Gen-Archiv 1988).

Gen-Archiv (Gene Archive) is a particularly active group of women in Essen who have collected publications on various aspects of genetic technology and made them publicly available. They believe science and technology should be demystified so the public can participate in an informed debate concerning their regulation. They also are concerned that state regulation of these technologies will only encourage their further acceptance.

The office of Gen-Archiv was among the 33 locations raided on 18 December 1987 by 200 officers of the Federal Criminal Investigation Bureau, the German equivalent of the U.S. Federal Bureau of Investigation.

The raids were carried out primarily against women who had critically examined reproductive and genetic technologies and attempted to communicate their findings. Raids were conducted in three provinces on homes, workplaces, and a medical practice.²⁹

On 19 December, the authorities stated the action had been carried out as part of an investigation of terrorist organizations, revolutionary cells, and a radical feminist group named Red Zora, in existence since the 1970s. Gen-Archiv believes

the action was obviously aimed at giving the legal structures and discussion-contexts on the subject of genetic and reproduction technologies the odour of criminal/terrorist activities (i.e., directed against the population) in the media. The aim is to separate the growing, if in part unfocussed, rejection of these technologies from those movements — in particular sections of the women's movement — who have formulated radical criticism of the development of the technologies and have for years been engaged in publicizing this. (Gen-Archiv 1988, 104)

Some German feminists argue against any law that would regulate NRTs, such as the Embryo Protection Act, since they fear such legislation only tends to legitimize the procedures it seeks to regulate while controlling only its most extreme practices (Klein 1989).

Feminists criticize the Embryo Protection Act on the grounds it is embryo-focussed and does not deal with the rights of women, who are the major focus of these technologies. According to some feminist critics, the act portrays women as simple egg receptacles and embryo incubators. Their inherent human dignity and rights are not recognized or protected by this legislation (Waldschmidt 1991).

That a fertilized egg is considered worthy of legal protection from the moment of fertilization also is a cause of concern, since "political experience shows that inasmuch as the embryo is held to be a legal entity in its own right, women's rights are curtailed" (Waldschmidt 1991, 212).

Feminist resistance to NRTs has been particularly strong in Germany, but this resistance is by no means universal among women. For example, IVF funding was reinstated following intense lobbying by infertile couples and doctors. The diversity of international public opinion also is present in Germany, but those women who oppose NRTs have been particularly well organized and effective.

Response of Religious Groups

An extensive literature search did not produce any writings on NRTs by the German Roman Catholic Church; thus, it must be assumed the Church follows the Vatican instruction described in Appendix 2.

The major Protestant church in Germany is the Lutheran or Evangelical Church (Evangelische Kirche in Deutschland). This church has published two recent documents pertaining to NRTs.

The first document, *God Loves All That Lives: Challenges and Tasks for the Protection of Life*, was published in 1989, before passage of the Embryo Protection Act. It was a joint declaration of the Council of the Protestant Church in Germany (Lutheran) and the German Bishops Conference (apparently the conference of German Lutheran bishops). It was issued in cooperation with the 13 mostly Protestant member and guest churches of the Council of Christian Churches in the Federal Republic of Germany and West Berlin.

This document permits IVF only if all fertilized eggs are returned to the woman's uterus. It does not contain policy statements on DI or surrogacy (Council for the Protestant Church in Germany 1989).

The second document, *Statement to the Committee on Legal Affairs of the German Parliament at Its Hearings on the Embryo Protection Law*, dated 9 March 1990, was published by the Office of the Evangelical Church in Germany (Evangelische Kirche in Deutschland). It deals more thoroughly with IVF. It does not call for prohibition of this technology but advises against it and advocates strong legal limits. IVF is not seen as an adequate solution to the problem of infertility and should be used only as a last resort. The proviso that all fertilized eggs should be returned to the woman's uterus is repeated. IVF also should not be used for sex selection.

This document is equally negative concerning the use of DI. It states DI with an anonymous donor should not be practised since it violates the child's right to know its genetic identity. Surrogacy also is seen as problematic.

The embryo is viewed as a potential human life from the moment of conception. This document advocates the then-proposed Embryo Protection Act (subsequently passed) should prohibit research that damages or destroys embryos, research on "excess" embryos, and embryo production solely for research (Evangelische Kirche in Deutschland 1990). These provisions now are part of the Embryo Protection Act.

New Zealand

Government Initiatives

Currently, there is no government regulation of NRTs in New Zealand; however, NRTs are under examination.

In 1985, the Law Reform Division of New Zealand's Department of Justice published *New Birth Technologies: An Issues Paper on AID, IVF, and Surrogate Motherhood*, which discussed contentious issues and outlined possible ways of dealing with them. This paper was prepared by government officials, and drew on the Warnock Report (U.K.) and the Waller Report (Victoria, Australia). Unlike these and other foreign reports, this document does not provide specific recommendations for regulation of NRTs. Instead, it "was aimed more at promoting informed public debate than setting out optional responses which the Government could make" (Caldwell and Daniels 1992, 257).³⁰

The Department of Justice welcomed public submissions on the report, and 164 submissions were received: 76 from groups and 88 from individuals (New Zealand, Department of Justice 1986). Caldwell and Daniels (1992) describe this rate of response as "muted." These submissions are analyzed in *New Birth Technologies: A Summary of Submissions Received on the Issues Paper* (New Zealand, Department of Justice 1986).

The 1985 issues paper did not contain specific recommendations for regulating NRTs; however, the government subsequently passed the Status of Children Amendment Act 1987 to clarify the legal status of children conceived through the use of donor gametes and embryos, either through IVF or DI. Its provisions are consistent with those of other countries as described in Part 1 of this report: the mother's husband or common-law or *de facto* partner is the child's legal father, provided he consented to the procedure. Consent is presumed in the absence of contrary evidence. If a donated egg is used, the childbearer is the legal mother. The act's clear intent is to establish the legal parenthood of the woman who receives a donated egg or sperm and her male partner. If a single woman is inseminated with donor sperm, or a married woman is inseminated with donor sperm without her partner's consent, however, the donor is the child's legal father, but he has no parental rights or liabilities unless he later marries the mother.

In their detailed analysis of this act, Caldwell and Daniels (1992) argue it is inadequate on several fronts:

1. It does not deal with the regulation or prohibition of surrogacy or the status of children born from such arrangements.
2. The act avoids the question of the child's right to access to information about the donor(s). The minister who introduced the bill stated legislating that issue would be premature but it must be dealt with eventually.³¹ Caldwell and Daniels feel the desire of some New Zealand adoptees to know their genetic heritage should point to the equal importance of dealing with this issue in regulating NRTs. They point out "the means of conception may not, from the child's point of view, make much difference" (Caldwell and Daniels 1992, 262). They conclude "it would surely have been desirable to have provided a general catch-all provision in the Status of Children Amendment Act 1987, making the welfare of the child the first and paramount consideration in both the use of the listed procedures, and in the decision of whether to disclose information concerning those procedures" (Caldwell and Daniels 1992, 263).
3. The rights of adults involved in NRTs are unresolved. Issues include:
 - (a) The consent of the husband or *de facto* partner is presumed, but it need not be in writing.

- (b) If the woman undergoing DI is single or the husband's consent is not given, the sperm donor appears to be the legal father; however, he has no parental rights or responsibilities unless he later marries the woman. Caldwell and Daniels point out if sperm donation is anonymous, it will be impossible to know if the donor later marries the woman who received his sperm and produced a child.
 - (c) The rights of the partners or children of donors within a legal marriage (other than children produced through DI) are not addressed.
 - (d) The rights and responsibilities, if any, of known donors are not addressed.
4. The issue of the integrity of birth records has not been addressed, nor that the records of DI births state the social father is the biological father. The issue of records also is important in preventing later marriages between half-siblings.
 5. The perspective of New Zealand's Maori people has not been considered in the act. Caldwell and Daniels state, "if New Zealand is truly a bi-cultural society, moving towards multiculturalism, what, if any, is the consensus position in relation to these issues? Maori perspectives regarding the rights and place of children may be seen to be quite different to views of other cultures ... [in regards to surrogacy and secrecy in DI]" (Caldwell and Daniels 1992, 265).³²

Caldwell and Daniels conclude their analysis of the Status of Children Amendment Act 1987 noting "the New Zealand legislation, by only concentrating on the 'technical' issues, has left unresolved the many complicated and demanding issues in this area. Further legislative attention to these issues is obviously needed" (Caldwell and Daniels 1992, 265).

Current government initiatives concerning NRTs focus on the Interdepartmental Monitoring Committee on Assisted Reproductive Technologies (IMCART). The committee acts as "a repository of information to monitor the issues associated with artificial birth technology, and to advise ministers as required" (New Zealand, Department of Justice 1986, 40-41). Chaired by Senior Legal Advisor for the Secretary for Justice Margaret Nixon, it consists of representatives of the departments of Health and Social Welfare, the ministries of Women's Affairs and Pacific Island Affairs, and Manatu Maori (the Ministry of Maori Affairs). As of November 1991, consultations have taken place with medical associations, women's groups, religious groups, and other interested parties. IMCART has requested meetings with some groups, but an organization or individual may request a hearing. The purpose of these meetings is to "[build] up an

agenda of the issues that the people consulted think are the ones that need to be addressed. How they are to be addressed is the question for the next stage of the process."³³

Regulation by the Medical Profession

A 1987 survey of 82 New Zealand obstetricians and gynaecologists found 86 percent of respondents believed New Zealand needs IVF legislation/regulation. Most preferred the decision-making body should be an independent group representing a wide range of interests (Daniels 1987).

IVF has been practised in New Zealand since 1983. In 1990, the Royal New Zealand College of Obstetricians and Gynaecologists (RNZCOG) adopted the guidelines of RTAC, established by the Fertility Society of Australia. Accreditation is based on meeting standards for scientific procedures, counselling, and the continuing education of physicians. The maximum registration period is three years, or one or two years if there are problem areas that need improvement. Accreditation involves inspection of the facility by RTAC, RNZCOG, and the New Zealand Infertility Society, an organization with lay and medical members. Two of the five reproductive technology units in New Zealand were accredited in 1990. RNZCOG proposes that accreditation will be mandatory to practise by the end of 1992.³⁴ RNZCOG also has produced guidelines for IVF and related practices (included in the summary grid).

It is unclear from the New Zealand material whether the above accreditation process also covers the practice of DI; however, since clinics that perform IVF also engage in DI this would be a logical conclusion. RNZCOG has produced guidelines for the practice of DI (included in the summary grid).

Surrogacy

Surrogacy is not specifically referred to in any New Zealand statute (Caldwell and Daniels 1992); thus, this practice occupies a legal grey area, as it does in many countries. A report prepared for the minister of justice states surrogacy contracts probably would be unenforceable.³⁵

The question of who would obtain custody of a child born from such an arrangement is complex. An untitled legal review prepared for the Ministry of Women's Affairs states the relationship is determined by default in accordance with the provisions of the Status of Children Amendment Act 1987, the Guardianship Act 1968, and the Family Proceedings Act 1980.³⁶ None of these acts specifically mentions surrogacy.

The Status of Children Amendment Act 1987 strengthens the position of the mother in surrogacy custody disputes, even though it does not mention the practice. Under this act, if a married woman produces a child by DI, her spouse is the legal father. The sperm donor has no parental rights, even though he intended to take on parental responsibilities by contracting for the pregnancy. If the woman is single, or if she is married but undergoing insemination without her husband's consent, the contracting father *may* be recognized as the legal father, but he has no

"rights and liabilities" under the act. Caldwell and Daniels summarize the effect of the Status of Children Amendment Act on possible surrogacy disputes in New Zealand:

The mother who conceives by way of artificial insemination enjoys statutory protection of her position, whereas the position of the sperm-producing male (the commissioning father) is weakened. This situation pertains even in the case of "total surrogacy," where the surrogate mother has no genetic link to the conceived child ... As it stands, the Act grants self-determination to the surrogate mother, and she is enabled to change her mind [and keep the child] with the assurance that she, unlike the commissioning male, is specifically accorded parental rights by statute. (Caldwell and Daniels 1992, 273)

Response of Women's Groups

As in all Western countries, feminist writers and groups in New Zealand have expressed various concerns about the practices examined in this report.³⁷

In March 1991, the Ministry of Women's Affairs published a document entitled *Paper to Interdepartmental Monitoring Committee on Assisted Reproductive Technologies: ART Issues from the Ministry's Perspective*. This document outlines eight areas of interest: infertility prevention; user safety, choice, and information; access to services; growth in services; egg donation; information for DI children; surrogacy; and other issues, including storage of gametes and embryos, embryo research, genetic manipulation, and selective abortion. The paper notes government intervention is needed on several fronts: raising the level of public debate, DI issues, and safety, efficacy, and choice in use of NRTs. The paper concludes noting a working party will be set up to consider the above issues, with terms of reference and membership drafted by IMCART.

Response of Religious Groups

The Anglican Church in New Zealand has no official position on the regulation of NRTs.³⁸ The New Zealand Catholic Church supports the official position of the Church as described in the Vatican instruction.³⁹

United Kingdom

Government Initiatives⁴⁰

Inquiries

The United Kingdom was one of the first countries to recognize a need to regulate NRTs following the birth of the world's first "test-tube" baby in England in 1978. In 1982, the government appointed a multidisciplinary committee headed by Mary Warnock to consider recent and potential developments related to human fertilization and embryology. The committee was to consider the social, ethical, and legal implications of these developments and make policy recommendations.

The committee's final report was published in 1984. Its best-known recommendations were to license IVF, DI, and related research; to permit embryo experimentation up to 14 days; to regularize the status of children born as a result of gamete donation; and to prohibit commercial surrogacy.

British inquiries have focussed on assisted reproduction and have tended to neglect such issues as gene therapy, fetal surgery, prevention of infertility, and judicial interventions in pregnancy, all subjects within the Commission's mandate.⁴¹ Legal and ethical concerns have received the most attention, especially the status of children and embryo experimentation, but social and economic issues such as the medicalization of reproduction, the social meaning of infertility, and the costs of infertility treatments versus the costs of prevention generally have been neglected. Issues often are dealt with in a superficial or ad hoc manner. For instance, the child's best interest is a common theme, but it is not universally applied. It is used as a rationale for prohibiting surrogacy but often is not mentioned in reports, most of which state children do not have a right to know their biological origins.

In general, as in Australia, the U.K. inquiries examine NRTs individually and do not examine broader social issues, such as health care priorities, women's reproductive-health needs, and the medicalization of reproduction.

Legislation

The Warnock committee's support for embryo research has caused controversy. Three private member's bills to ban this practice were introduced in Parliament from 1985 to 1987 but failed to pass. These Unborn Children (Protection) Bills would have prohibited the creation, storage, or use of a human embryo for any purpose other than to assist a specified woman to become pregnant. Each time a doctor wanted to perform IVF, he or she would need to apply in writing to the secretary of state for consent (Morgan and Lee 1991). Effectively, these laws would have halted the clinical practice of IVF (Spallone 1989).

In 1985, the government passed the Surrogacy Arrangements Act. This legislation probably was a reaction to news that a U.S. couple had hired a British woman to act as a contract mother in 1985. This act banned commercial surrogacy and rendered surrogacy contracts unenforceable.

In 1987, the Family Law Reform Act was passed. This legislation is not primarily concerned with reproductive issues, but it states a child conceived with donor sperm is the legitimate child of the mother and her consenting husband.

After much debate, the government passed the long-awaited Human Fertilisation and Embryology Act in 1990. This legislation was deemed necessary to "regulate research on embryos, to protect the integrity of reproductive medicine, and to protect scientists and clinicians from legal action and sanction" (Morgan and Lee 1991, 22).⁴² It is based primarily on the recommendations of the Warnock Report.

The major objectives of this bill are:

1. To provide a statutory framework for the control and supervision of research involving human embryos;
2. To provide for the licensing of certain types of assisted conception practice, namely those which involve the creation of a human embryo outside the body, or partly inside and partly outside, and any treatment service which involves the use of donated gametes (egg and sperm) or donated embryos;
3. To effect changes to the Abortion Act 1967. (Morgan and Lee 1991, 27)⁴³

The regulation of these practices is to be undertaken by the Human Fertilisation and Embryology Authority (HFEA), a new statutory body established by the act. This body consists of 21 members, at least half of whom may not be medical doctors or previously involved in embryo or gamete storage or research. HFEA has the authority to issue three types of licences:

1. A treatment licence, which will allow a facility to perform DI, egg donation, embryo donation, IVF, and GIFT (only when either or both of the gametes are donated);
2. A storage licence to permit the freezing of gametes, embryos, or both;
3. A research licence to permit the creation of embryos and their use for approved research projects. The types of research for which these licences will be granted are specified in the act.

Besides granting the above licences, HFEA also is charged with developing a code of practice to regulate the procedures covered in the act.

This act follows the Warnock recommendation and permits embryo research up to 14 days, the point at which the "primitive streak"⁴⁴ is known to develop. This was its most controversial aspect. Specific research projects will be licensed by HFEA for no more than three years. Only certain research can be licensed, and this is described in the act. The act's provisions are far more liberal than previous legislative attempts to regulate U.K. embryo research (Morgan and Lee 1991).

The act also permits embryo freezing for five years and the freezing of gametes for up to 10 years. In theory, an embryo could be formed from gametes frozen for 10 years and stored for another five years before being used for research, in effect allowing a 15-year time span for the use of gametes in research (Morgan and Lee 1991).

The act also affirms that children born as a result of egg/embryo donation are the children of the birth mother and her husband, as was previously the case with children born from sperm donation under the aforementioned Family Law Reform Act 1987. It also specifies the donor information that must be kept on file and stipulates children born from

donor gametes must have access to non-identifying information about the donor(s) when they reach the age of majority.⁴⁵

Amendments to this bill strengthen the Surrogacy Arrangements Act by prohibiting surrogacy through the use of techniques unavailable when the original act was passed in 1985.

Another controversial aspect is the act does not include the practice of GIFT with the couple's own gametes in its list of regulated technologies. Only GIFT with donor gametes is regulated, since one of the act's main purposes was to regulate those technologies that manipulated human gametes *outside the body* (Morgan and Lee 1991). Since GIFT involves the fertilization of embryos *inside* the woman's body, GIFT ostensibly was excluded from the legislation for this reason. Several attempts were made during the debate on this bill to include GIFT since it involves the use of often-hazardous superovulatory drugs. Some British centres also are known to practice GIFT by transferring more than three eggs at one time. This can lead to triple or higher-order pregnancies, dangerous to mother and children and costly in emotional, social, and financial terms.

The exclusion of GIFT is an important issue, since more U.K. clinics practise GIFT than practise IVF. Thus, the exclusion of GIFT means one of the most frequently used NRTs is unregulated under the act. Arguments to include GIFT were unheeded on the grounds that regulating GIFT would open the door to general regulation of superovulatory drug use and complicate the practice of DI and artificial insemination by husband, where these drugs also are often used.

Morgan and Lee present a possible political explanation for its exclusion:

It has been suggested that one forceful reason why the procedure remains out with the statutory framework is in an effort to secure the compliance of the obstetricians and gynaecologists with the other regulatory aspects of the legislation. If this is true, it is another example of the clinical profession dominating input into the legislative process. It also illustrates the extent to which Parliament was prepared to defer to professional interest groups in order to find some way of taking on board some of the equally pressing issues raised by the original Warnock report, and of responding to the technological challenge posed by developments of the more recent past. (Morgan and Lee 1991, 135)

Regulation by the Medical Profession

The Warnock Report's recommendations concerning the licensing of IVF, DI, and embryo experimentation were not acted upon promptly by the government; however, several private members' bills were introduced that would have prohibited embryo research and effectively halted the clinical practice of IVF. The Medical Research Council (MRC) and the Royal College of Obstetricians and Gynaecologists (RCOG) acted to fill this gap by establishing the Voluntary Licensing Authority (VLA) in 1985. Its guidelines were based on Warnock's recommendations and its own reports.⁴⁶ The VLA subsequently became the Interim Licensing Authority

(ILA) in anticipation of a regulatory body established by law. This now has been established under the Human Fertilisation and Embryology Act described above. The ILA issued a series of reports and guidelines from 1986 to 1990 (see United Kingdom, Guidelines/Reports No. 2).

The British medical and research communities generally have opposed the 14-day limit on embryo research recommended by Warnock and legislated by the Human Fertilisation and Embryology Act. The MRC and RCOG have argued against the 14-day limit, saying it is arbitrary, should be defined differently, and should be more open-ended (Spallone 1989).

Following Warnock's 14-day limit recommendation and the public uproar about her committee's approval of embryo research, the newly formed VLA and other British scientists published articles explaining the rationale for this time period. They invented the term *pre-embryo* to describe an embryo less than 14 days old. This term now has come into scientific usage, but not without criticism, especially from the feminist community. These critics feel it is used to justify embryo research by "de-humanizing" the embryo, declaring it really is not an embryo at all, but a "pre-embryo."⁴⁷ The term also has been criticized in the scientific press as an inaccurate, self-serving creation. It was not used in the Warnock Report (Spallone 1989). It has also been seen as a term that is useful in describing the stage before differentiation of the cells that form the embryo.

British IVF doctors also lobbied against the inclusion of GIFT in the legislation.

Response of Women's Groups

Feminist women's groups have been especially critical of the Warnock Report, claiming it is embryo-centred and does not examine NRTs from women's point of view. In fact, no women's groups were invited to appear before the committee. Warnock also failed to examine the health hazards of these technologies for women.

The Human Fertilisation and Embryology Act 1991 is based on Warnock's findings; thus, it is unlikely these criticisms will become muted with time. Feminist women supported the Warnock Report in its condemnation of surrogacy, and this is maintained in the act.

As in other countries examined in this report, it is impossible to identify a single "women's" response to the regulation of these technologies in the United Kingdom. Rather, there are different reactions depending on women's political orientations and whether they need to use these technologies themselves to alleviate infertility. In that sense, the U.K. situation is identical to that in Canada, and indeed in every country where NRTs are practised.⁴⁸

Response of Religious Groups

British church groups were among the first and most vocal critics of the Warnock Report's support of embryo research. This opposition has not abated.

The Roman Catholic Church in England is officially opposed to IVF, since that technology interferes with the unitive and procreative marital functions; therefore, it is morally illicit. IVF is perceived by the Church to be contrary to the embryo's human dignity and to everyone's right to be conceived and born from sexual intercourse within marriage.

The Church also emphatically opposes embryo storage for any indefinite period and use of such embryos to produce a child. Embryo research violates the right of children to be conceived within the sanctity, dignity, and protection of marriage (Catholic Bishops' Joint Committee on Bioethical Issues 1987; Coughlan 1990). These positions are in line with the Vatican instruction in Appendix 2.

The U.K. Church makes no direct reference to DI; however, it presumably would oppose DI with an unknown donor, since this may be viewed as adultery. The Church's opposition to trans-species fertilization also is mentioned (Catholic Bishops' Joint Committee on Bioethical Issues 1987; Coughlan 1990).

The Church also opposes commercial and altruistic surrogacy for reasons similar to those expressed in regard to IVF. Surrogacy is not discussed in detail except to suggest criminal sanctions for those involved in surrogacy arrangements (Catholic Bishops' Joint Committee on Bioethical Issues 1987; Coughlan 1990; Götz 1988).

The Anglican Church permits responsible use of IVF to overcome childlessness since it does not undermine the interweaving of the procreational and relational benefits of marriage. It is opposed to the use of donor gametes. The Church does, however, voice serious concerns regarding the practical aspects of IVF. In particular, the Church cannot condone the creation of more embryos than will be used to create pregnancy (Church of England 1985).

The Anglican Church supports artificial insemination by husband since it serves to overcome infertility within marriage. The more traditional sector of the Church objects to DI with an unknown donor since it conflicts with the concept of marriage as a union of two people into one. If DI occurs within a stable (presumably heterosexual) union, however, it is acceptable. In effect, this view places the importance of a nurturing social setting/environment for the child above genetic concerns. The Church also stresses the importance of informed consent on the part of the couple and the donor regarding the ramifications of DI (Church of England 1985).

The Anglican Church opposes surrogacy for the same reasons that it opposes DI and IVF with donor gametes. The Church is particularly concerned with the minimization of the gestational role of the contracting mother in surrogacy, the confusing array of social relationships that result from this practice, and the payment of a fee which undermines the dignity of women who bear children whom they do not intend to mother (no explanation is offered concerning the rationale behind this statement) (Church of England 1985).

United States

Federal Initiatives

Government regulation of NRTs in the United States is complicated because state legislatures rather than the federal Congress are responsible for health policy. Congress usually responds to state initiatives and often seeks to provide minimum national standards or funds for activities it wishes to encourage (Blank 1990). Federally, U.S. efforts to regulate NRTs have focussed on IVF and embryo research. These efforts have been dominated by debates concerning the status of the fetus and implications of that status.

In 1974, the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research was established under the terms of the National Research Act 1974. This act required establishment of institutional ethics review boards at all facilities conducting federally funded human subjects research. It also placed a moratorium on federally funded fetal research until the commission issued its report.

The commission's 1975 *Research on the Fetus* report recommended permitting fetal research within certain parameters. It also recommended establishment of a National Ethics Advisory Board in addition to the local boards. Approval of this board was required before IVF research or any other fetal research could occur. Established in 1975, this board published *Protection of Human Subjects: HEW Support of Human In Vitro Fertilization and Embryo Transfer: Report of the Ethics Advisory Board* in 1979. This report stated research involving human IVF and embryo transfer is ethically acceptable under certain conditions. (See United States, Inquiry No. 2 in the summary grid.)

In reaction to its report, the board received 13 000 public comments, most of which were negative. Most comments focussed not on IVF, but rather on issues concerning the destruction and disposal of embryos, the embryo's moral status, and future implications. Congress also responded negatively. Most respondents believed IVF research was immoral and unethical, were concerned with future implications, and believed adequate guidelines to prevent abuse were not yet in place. There also was much concern about embryo rights. The board lapsed in 1980 and has not been re-established by the Department of Health, Education and Welfare (HEW). The report stated IVF research should be permitted under certain conditions; however, its recommendations have not been acted upon by successive administrations (Canada, Royal Commission on New Reproductive Technologies 1991a).

The public and governmental response to the board's recommendations and its subsequent disbanding have been crucial to the development of IVF and embryo research in the United States. Commentators generally agree linking IVF and embryo research with the controversial abortion issue has made the question of regulating IVF "too hot to handle" for the Administration.⁴⁹

As a result of this political climate, no requests for funding for IVF or embryo research were submitted for approval in the 10 years following the disbanding of the Ethics Advisory Board (Bonnicksen 1989). The board dealt only with federally funded research; privately funded research is neither regulated nor prohibited, as long as it does not violate other federal or state laws or regulations.

The result of this legislative vacuum has been the unrestricted growth of IVF clinics in the United States (now numbering about 200), and a situation in which IVF is an acceptable clinical practice but unacceptable as a research subject (Bonnicksen 1989). Since the disbanding of the Ethics Advisory Board, IVF and other reproductive technologies have not been addressed at the federal level except in congressional hearings. According to researcher Robert Blank,

[these hearings] demonstrate once more the lack of a comprehensive, coordinated approach to making reproductive policy. [They] clearly illustrate the tendency of each committee to focus on particular aspects of the problem to the exclusion of many others ... the cumulative impact of reproductive and genetic technologies is obscured ... they fail to deal with the harder questions concerning social priorities in reproduction and the directions we, as a society, want to take. (Blank 1990, 139)

At this moment, no federal action has resulted from these meetings.⁵⁰ The national regulation of IVF and related research on embryos remains in a legal limbo.

State Initiatives

In Vitro Fertilization

IVF is not dealt with extensively in state legislation. The Pennsylvania Abortion Control Act 1982 (see United States, Legislation No. 4 in the summary grid) requires that IVF clinics file detailed quarterly reports with state authorities and that gamete donation remain anonymous. The Louisiana *Revised Statutes* 1986 (see United States, Legislation No. 1 in the summary grid) requires that IVF clinics meet American Fertility Society or American College of Obstetricians and Gynecologists standards. Effectively, the medical profession regulates IVF clinics in that state. Louisiana and Kentucky also permit embryo donation.

As might be expected from the U.S. preoccupation with embryo status, some state legislation deals with fetal research. Most statutes are concerned with research using aborted fetal tissue, but those dealing with preimplantation embryos tend to prohibit research that is not therapeutic for the embryo or focussed on improving its chances for implantation. These statutes also tend to be poorly drafted (Canada, Royal Commission on New Reproductive Technologies 1991a). The trend definitely is toward protection of embryos. Table 1 describes the regulation of U.S. fetal research as of 1988.

Table 1. State Statutes — Fetal Research

State	Restricts fetal research	Prohibits sale of fetus or embryo	Mentions preimplantation embryos ^a	May restrict research with pre-embryos ^b
Arizona	x		x	x
Arkansas	x	x		x
California	x		x	x
Florida	x	x		x
Illinois	x		x	x
Indiana	x			
Kentucky	x			x
Louisiana	x ^c		x	x
Maine	x		x	x
Massachusetts	x		x	x
Michigan	x		x	x
Minnesota	x		x	x
Missouri	x			
Montana	x			
Nebraska	x			
New Mexico	x		x	
North Dakota	x		x	x
Ohio	x		x	x
Oklahoma	x		x	x
Pennsylvania	x		x	x
Rhode Island	x		x	x
South Dakota	x			x
Tennessee	x	x		
Utah	x	x	x	x
Wyoming	x			x

^a Terms such as *embryo*, *product of conception*, *conceptus*, or *unborn child*.

^b Statute could be interpreted as prohibiting some pre-embryo research.

^c Louisiana statute found unconstitutional in *Margaret S. v. Edwards*, 794 F.2d 994 (1986).

Source: Adapted from U.S. Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices* (Washington, DC: U.S. Government Printing Office, 1988), 251.

A secondary trend in state legislation is to require insurance companies to reimburse the costs of IVF and related services for clients with pregnancy-related coverage. Such bills specify exemptions and limitations. As of 1987, five states required IVF to be included in pregnancy-related coverage and at least five other states were considering mandating coverage in 1988. The mandating of insurance coverage for IVF

has come about largely through the efforts of infertility support groups, such as RESOLVE (Blank 1990).⁵¹

Donor Insemination

DI has not been regulated at the federal level in the United States, but there has been much state legislation. Most statutes focus on the filiation of the child. A number of states use the following wording:

If, under the supervision of a licensed physician and with the consent of her husband, a wife is inseminated artificially with semen donated by a man not her husband, the husband is treated in law as if he were the natural father of a child thereby conceived. The husband's consent must be in writing and signed by him and his wife. (Alabama Uniform Parentage Act, Sec. 26-17-21)

Most statutes refer only to married women; thus, the legal right of single women to use medically controlled DI is uncertain (Blank 1990). Most state laws also specify that DI may be performed only by licensed physicians (see United States, Legislation No. 5(J) in the summary grid).

Other issues legislated to a lesser extent are donor screening for infectious and genetic diseases, including AIDS; the use of frozen semen only; and penalties for donors who knowingly supply misleading information during their medical screening (see United States, Legislation No. 5(C), (E), and (K), respectively, in the summary grid).

Most state legislation does not deal with the issue of the child's right to identifying or non-identifying donor information. Fourteen states require records to be kept sealed unless specified by court order. This proviso leaves the door open for offspring (and, presumably, their parents) to investigate a genetically linked disorder possibly transmitted through the donor. But these statutes do not state the child has a routine right to non-identifying or identifying information. The obvious trend is to maintain the notion of the "normal" family, but to permit the child to obtain information about the donor through court order if the information is of grave medical importance.

Surrogacy

As with IVF and DI, surrogacy contracts are not regulated by the U.S. government. There is a large and growing body of state legislation, most adopted after the infamous 1987 Baby M case. A 1990 compilation produced by the Department of Government Relations of the American College of Obstetricians and Gynecologists is included in the summary grid legend.

The legislative trend described in that document is toward discouraging surrogacy; however, a few states leave legal loopholes that *may* tend to make surrogacy arrangements easier to uphold in court. For example, Florida bans surrogacy contracts but permits "preplanned adoption arrangements" that may compensate the surrogate only for her expenses. Obviously, this legislation will not prevent the under-the-table payments that make surrogacy more attractive for the contracting mother.

A few state laws clearly do not intend to discourage surrogacy. In Arkansas, custody is granted to the contracting couple; in New Hampshire, regulated surrogacy contracts are permitted under specific circumstances. In Kansas, surrogacy is exempted from usual prohibitions on adoption agency advertising. In Nevada, surrogacy is exempted from the state prohibition on baby-selling (Blank 1990).⁵²

In the absence of national surrogacy legislation, the differences in state legislation have important implications. "One result of leaving surrogacy to be governed by state law is that people living in states that prohibit paid surrogacy ... will not necessarily be denied the use of agencies and surrogate mothers in states in which it is legal" (Field 1988, 9). This situation may lead to a type of reproductive tourism, where couples seeking a surrogate move to the state with the least restrictive laws or seek a contracting mother who will give birth there.

Field also notes it is not the absence of surrogacy law that is problematic. Instead, Field describes how an excess of applicable adoption, contract, and custody laws results in a complex legal situation, even in states where specific surrogacy legislation exists.⁵³

Blank also points out how a law intended to regulate one reproductive practice can have the opposite effect when applied to another practice. For instance, laws designed to protect sperm donors in DI from paternity obligations can act against the wishes of donors in surrogacy contracts who desire to become the child's legal father. He points out that if New Jersey, the state in which the Baby M case occurred, had had a law stating sperm donors have no parental rights, then the legal claim of William Stern, Baby M's genetic father, probably would have been voided. Blank concludes,

This situation cogently demonstrates how complex and potentially confusing the legal context of reproductive technologies can become. By protecting the interests of one party under one application, that same party in a different application is deprived. The futility of writing legislation specific enough to be equitable yet general enough to make sense is obvious here. (Blank 1990, 123)

An interesting approach has been taken by the National Conference of Commissioners on Uniform State Laws. This organization has published a draft law, entitled "Uniform Status of Children of Assisted Conception." Its preamble states the law is not designed to regulate surrogacy per se, but rather to protect the children born of NRTs. The act takes the unusual step of offering two options for regulating surrogacy for those states that may wish to adopt it. Alternative A legalizes surrogacy as long as the contract is court approved; alternative B declares all surrogacy agreements void under the law (National Conference of the Commissioners on Uniform State Laws 1989). North Dakota has adopted this model act and banned surrogacy under the provisions of alternative B.

Regulation by the Medical Profession

Bonnicksen and Blank (1988) surveyed 88 directors of IVF programs in the United States. They found these directors favoured policies supporting IVF and rejected restrictive policies. There was overwhelming support for state law requiring insurance coverage for IVF, federal funding of IVF research, and legal clarification of the parent-child relationship when donor embryos were used. Restrictive policies such as mandatory chromosomal analysis of donor tissues and the filing of quarterly reports were strongly rejected (74 percent and 75 percent, respectively). The respondents rejected laws regulating embryo research (54 percent), standardized consent forms (56 percent), and a national commission to monitor IVF and its developments (58 percent). These figures show, however, that these IVF directors are split in their response to these last three policies.

The medical community's overall response to the IVF policy vacuum described above has been to formulate their own guidelines through professional associations (see United States, Guidelines/Reports Nos. 1, 2 in the summary grid).⁵⁴ On 7 January 1991 the American College of Obstetricians and Gynecologists and the American Fertility Society stated they would establish a joint board to set ethical guidelines for fetal tissue research and NRTs. One physician stated, "We are acting to fill a moral vacuum created by the abdication of the Federal Government." Another said, "There is a vacuum on public policy in these areas ... There is abortion gridlock, and in the Government there is also just plain fear of any issue pertaining to reproduction" (Hilts 1991, C3). Financed by both societies, the 15-member board will include doctors, scientists, lawyers, ethicists, and members of public interest and health groups. Doctors and scientists will form a minority to ensure broad public input. It will provide guidelines for researchers seeking an outside ethical opinion, but researchers will not be obliged to consult the board or follow its recommendations (Hilts 1991).

Response of Women's Groups

This report cannot analyze in detail the varied responses of U.S. women's groups to the regulation (or lack of regulation) of these technologies. Largely, the concerns raised by U.S. women parallel those expressed by Canadian women in the public hearings held by the Commission from September to November 1990 (see Canada, Royal Commission on New Reproductive Technologies 1991c, 22-23). As with Canadian women, the views of U.S. women cannot be discussed as though these women are one identifiable interest group.

The greatest criticism of these technologies and their lack of regulation has come from U.S. feminists. These women are by no means united in their views concerning NRTs. Some commentators differentiate between what they call the liberal feminist approach, which stresses individual choice and the individual's right to use technology based on personal

needs, and radical and socialist feminism, which emphasizes the negative effect of these technologies on women, the impossibility of truly informed "choice" within in a capitalist, patriarchal society, and the anti-woman bias of masculinist science and the health care system in particular.

Behuniak-Long (1991) believes this split in feminist thinking is best illustrated by the debate over surrogacy. She argues radical and socialist feminists are vehemently opposed to this practice because they believe surrogacy undermines women's autonomy and turns them into reproductive vessels. She says liberal feminists like Andrews (1989) and Shalev (1989) represent the opposing position since they argue women should be able to sell their reproductive power as intelligent, rational human beings capable of making their own decisions.

Response of Religious Groups

The Roman Catholic Church

Extensive bibliographic searches did not locate a position paper on NRTs written by the U.S. Roman Catholic hierarchy. Most Roman Catholic scholarship on NRTs is based on discussions of the 1987 Vatican instruction provided in Appendix 2. Some sources challenge the arguments in that document; however, all appear to agree with the instruction on the centrality of the human embryo and the importance of maintaining the traditional nuclear family.⁵⁵

Response of the Medical Profession to the Vatican Instruction

In 1987, the Ethics Committee of the American Fertility Society issued a formal response to the Vatican instruction outlined in Appendix 2. The committee already had issued ethical guidelines in 1986,⁵⁶ and noted its conclusions concerning the ethics of the NRTs conflicted with those of the Vatican (American Fertility Society 1988).

The ethics committee disagrees with the major positions taken by the Catholic Church with respect to homologous artificial insemination (insemination of a woman with sperm from her male partner), heterologous artificial insemination (insemination of a woman with sperm donated by a male other than her partner), and embryo research. It concludes with a conciliatory call to "continued re-evaluation of the changing societal and moral issues and views involved in the ever-evolving new reproductive technologies" (American Fertility Society 1988, 7S).

What is interesting about this document is not its conclusions, but rather that the American Fertility Society committee felt the need to write it at all. This is the only document examined in which a medical body directly confronts the ethical position of a religious group. This may reflect the strong influence of the U.S. Catholic Church and that the U.S. abortion debate has stifled and continues to stifle federal funding and approval for embryo research.

The Protestant Churches

Extensive bibliographic searches and inquiries did not produce official documents outlining the positions of the major U.S. Protestant churches. These churches range from large congregations to small, from radical to conservative. They may have formulated no official position on these technologies, or they may have published their positions as internal documents.

Judaism

Judaism in the United States appears to be the most progressive of the three religions examined regarding NRTs. Unlike Roman Catholicism, Jewish law is not based on the natural law of the domination of "man" by nature. Science and technology are to be pursued if they lead to betterment of the human condition, such as overcoming infertility. Thus, the U.S. Judaic tradition permits IVF as an aid in fulfilling the procreative function of the family (Feldman 1986; Gordis 1989).

The Jewish response to DI in the United States is varied. For traditionalists, DI with sperm from an anonymous donor is considered adultery and raises problems concerning the child's paternity and legitimacy, the culpability of the doctor and the donor, and potential incest between half-siblings (Rosner 1970). More liberal thinkers are unconcerned about incest, since no sexual intercourse occurs when donor semen is used. The lack of knowledge of the child's ancestry in this form of artificial insemination is cause for concern, however, since Judaism puts great store in knowing one's lineage (Feldman 1986).

Ultimately, it is impossible to present a single Jewish opinion on insemination with an unknown donor since Jewish belief varies from conservative to radical.

Insemination using the husband's sperm is acceptable if sexual intercourse over years has not produced pregnancy, if other methods of overcoming infertility have not worked, and if the semen is obtained through coitus interruptus or the use of a condom (Feldman 1986; Gordis 1989).

Generally, Judaism regards surrogacy as the least acceptable method of overcoming infertility. The payment of a fee to the contracting mother, which may be seen as baby-selling, the complex legal issues involved, the removal of the baby from its natural mother, and the degradation of the mother's maternity and human dignity are seen as negative aspects of this practice. Since contract motherhood confuses the identity of the child's mother, this also is seen as a negative aspect (Feldman 1986; Gordis 1989).

Appendix 1. Donor Insemination in Sweden

Since 1985, DI has been regulated in Sweden by the Act on Insemination. The act is the result of the 1983 report, *Barn genom insemination*. Its major concern was to give children born from DI the same legal status as biological and adopted children (Bygdeman 1989).

Before 1985, DI was unregulated in Sweden. "As the law concerning parentage in Sweden then stood a husband who had consented to his wife or female cohabitant being inseminated with sperm from another man could at any time and with no limitations file proceedings with a court to establish that he was not the child's biological father" (Jonsson 1988, 149). This led to cases in which some children had no legal father if the "social father" changed his mind or the couple separated.

The 1985 law states that (1) only married or cohabiting women can be inseminated, (2) a man must give his written consent to his partner's insemination, (3) he is the child's legal father, (4) DI can be performed only in a hospital by an obstetrician/gynaecologist, and (5) the doctor chooses the sperm donor.

The legislation is unique in requiring that information about the donor and his identity must be preserved on file for 70 years. Anonymous donation is not permitted. Once the child has reached maturity (in practice, age 18) he or she may learn the identity of the biological father; however, parents are not obliged by law to inform their DI child of its origins. The prohibition of donor anonymity was hotly debated in the Swedish media, and doctors were adamantly opposed to the removal of the donor's right to anonymity (Bygdeman 1989).

Before the law was passed, 10 hospitals were performing DI. Eighteen months later, four hospitals had stopped performing DI because of difficulty in recruiting donors. One hospital continued with DI but at a lower level than previously owing to the same difficulty, and the remaining five hospitals felt that they had enough donors. Initially, donors had fallen off, but they had been replaced by a different type of donor: mature fathers sympathetic to the pain of childlessness (Jonsson 1988).

Appendix 2. The Vatican Instruction

Introduction

In March 1987, the Congregation for the Doctrine of the Faith of the Catholic Church issued *Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation*, known in Latin as *Donum Vitae*.

This document represents the Church's official position on IVF, DI, surrogacy, and embryo experimentation. Most of the instruction comprises questions and answers. Quotations from relevant sections are provided

below. In-depth commentary and analysis can be found in the preceding text in the sections on responses of religious groups.

The Church believes procreation should occur only within marriage, and the human embryo is a person from the moment of fertilization. These points form the basis of its teachings on the technologies examined.

Embryo Experimentation/Sex Selection

Are therapeutic procedures carried out on the human embryo licit?

"One must uphold as licit procedures carried out on the human embryo which respect the life and integrity of the embryo and do not involve disproportionate risks for it but are directed toward its healing, the improvement of its condition of health, or its individual survival" (*Instruction*, 15).

How is one to evaluate morally research and experimentation on human embryos and fetuses?

"Medical research must refrain from operations on live embryos, unless there is a moral certainty of not causing harm to the life or integrity of the unborn child and the mother, and on condition that the parents have given their free and informed consent to the procedure ... If the embryos are living, whether viable or not, they must be respected just like any other human person; experimentation on embryos which is not directly therapeutic is illicit" (*Instruction*, 16-17).

How is one to evaluate morally the use for research purposes of embryos obtained by fertilization in vitro?

"It is immoral to produce human embryos destined to be exploited as disposable 'biological material' ... It is a duty to condemn the particular gravity of the voluntary destruction of human embryos obtained 'in vitro' for the sole purpose of research, either by means of artificial insemination or by means of 'twin fission' [not defined] ... It is therefore not in conformity with the moral law deliberately to expose to death human embryos obtained in vitro" (*Instruction*, 18-19).

What judgment should be made on other procedures of manipulating embryos connected with the "techniques of human reproduction?"

"Certain attempts to influence chromosomic or genetic inheritance are not therapeutic but are aimed at producing human beings selected according to sex or other predetermined qualities. These manipulations are contrary to the personal dignity of the human being and his or her integrity and identity" (*Instruction*, 19-20).

Reproduction with the Use of Donor Gametes (Heterologous Artificial Fertilization)

"Heterologous artificial fertilization is contrary to the unity of marriage, to the dignity of the spouses, to the vocation proper to parents, and to the child's right to be conceived and brought into the world in marriage and from marriage ... These reasons lead to a negative moral judgment concerning heterologous artificial fertilization: consequently fertilization of a married woman with the sperm of a donor different from her husband and fertilization with the husband's sperm of an ovum not coming from his wife are morally illicit. Furthermore, the artificial fertilization of a woman who is unmarried or a widow, whoever the donor may be, cannot be morally justified" (*Instruction*, 24-25).

Surrogacy

Is "surrogate" motherhood morally licit?

"No, for the same reasons which lead one to reject heterologous artificial fertilization: for it is contrary to the unity of marriage and to the dignity of the procreation of the human person" (*Instruction*, 25).

Embryo Freezing

"The freezing of embryos, even when carried out in order to preserve the life of an embryo ... constitutes an offence against the respect due to human beings by exposing them to grave risks of death or harm to their physical integrity and depriving them, at least temporarily, of maternal shelter and gestation, thus placing them in a situation in which further offences and manipulation are possible" (*Instruction*, 19).

Homologous Artificial Fertilization

Is homologous "in vitro" fertilization morally licit?

"Such fertilization is neither in fact achieved nor positively willed as the expression and fruit of a specific act of the conjugal union. In homologous IVF and [embryo transfer] ET, therefore, even if it is considered in the context of de facto existing sexual relations, the generation of the human person is objectively deprived of its proper perfection: namely, that of being the result and fruit of a conjugal act ... the Church remain opposed from the moral point of view to homologous 'in vitro' fertilization. Such fertilization is in itself illicit and in opposition to the dignity of procreation and of the conjugal union, even when everything is done to avoid the death of the human embryo" (*Instruction*, 30-31).

How is homologous artificial insemination to be evaluated from the moral point of view?

"Homologous artificial insemination within marriage cannot be admitted except for those cases in which the technical means is not a

substitute for the conjugal act but serves to facilitate and to help so that the act attains its natural purpose" (*Instruction*, 31).

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Notes

1. These seven countries were chosen by the Royal Commission because of their importance in development of IVF, DI, and preconception contracts.
2. This interpretation of embryo status is not surprising, since Louisiana is a conservative state with restrictive abortion laws.
3. Some documents that specify the regulatory body do not state this regulation should take the form of clinic licensing. Conversely, some documents that require or recommend licensing do not specify the regulatory body. For this reason, the summary grid contains separate categories for (a) regulatory body specified and (b) IVF permitted only in approved/licensed facilities.
4. Section 28 of the statute, *Qualifications*, reads as follows: "Only medical facilities meeting the standards of the American Fertility Society and the American College of Obstetricians and Gynecologists and directed by a medical doctor licensed to practise medicine in this state and possessing specialized training and skill in in vitro fertilization also in conformity with the standards established by the American Fertility Society or the American College of Obstetricians and Gynecologists shall cause the in vitro fertilization of a human ovum to occur. No person shall engage in in vitro fertilization procedures unless qualified as provided in this Section."
5. This legal requirement probably is the result of intense lobbying by infertility support groups in these states who were concerned about the high cost of IVF treatment.
6. DI is heavily regulated at the national level in France. See the section on France in Part 2 for an extended discussion of DI in that country.

7. It may have been the authors' intention to exclude single women, but unless such an exclusion is explicitly stated it was not included in the grid.

8. The information in this section comes primarily from the Australian Inquiries Binder produced by the Analysis Division of the Royal Commission, unless otherwise specified.

9. Regulation of embryo experimentation in Australia is complex, since this practice is governed by state legislation and regulations. For an overview, see Ewing (1990a).

10. A description and critical analysis of the development of IVF in Australia can be found in Rutnam (1991).

11. Personal communication from Rona Achilles, 12 December 1991.

12. Australian feminist critiques of NBCC surrogacy papers can be found in Ewing (1990b), Rowland (1990), and Scutt (1991). The development of IVF in Australia is critiqued from a feminist perspective in Rutnam (1991).

13. The other is the report of the Australian NBCC described earlier. For a description of the prevalence and practice of surrogacy in Canada, see Eichler and Poole (1988).

14. See Knoppers and Sloss (1986, 705) for further discussion of the Quebec Civil Code.

15. This term is defined to include other forms of assisted conception besides DI.

16. See the Ontario Law Reform Commission report (1985, 375) for the text of the Yukon legislation.

17. This act was amended by the Uniform Law Conference at its August 1990 meeting, but provisions concerning the filiation of children born through assisted reproduction were not changed.

18. Personal communication from the Canadian Fertility and Andrology Society staff, January 1992.

19. These guidelines are excluded from the summary grid because they deal with the technical aspects of IVF, such as medical criteria for admission, staff training, and equipment standards. The guidelines state IVF clinics should comply with the ethical guidelines published by the Society of Obstetricians and Gynaecologists of Canada and the Canadian Fertility and Andrology Society, which are included in the grid, as well as the latter's guidelines on DI, also in the grid.

I am grateful to Dr. Arthur Leader, chair of Ontario's Obstetrics and Gynaecology Task Force on Independent Health Facilities, for providing a copy of these guidelines and a description of their history.

20. Since these guidelines are concerned with technical issues, they are not included in the summary grids. I am grateful to Dr. Clarke Fraser, who chaired the committee that produced these guidelines, for providing a copy and an explanation of their history.

21. The information in this section is taken from the Royal Commission's Inquiries Binder for France, unless otherwise specified.

22. Further information on the operation of CECOS can be found in *L'insémination artificielle*, published by CECOS in 1991.

23. Personal communication from Justice Christian Byk, 31 October 1991.
24. Both quotations are translated from the French original of Memmi (1989, 28-29).
25. For an example of this literature, see Laborie (1988).
26. English copies of this act, with slightly different translations, are published in *Bulletin of Medical Ethics* (December 1990); *Human Reproduction* 6 (1991); and *International Digest of Health Legislation* 42 (1991). Full references are contained in the bibliography.
27. The act specifically states this practice is acceptable only to prevent the transmission of sex-linked diseases; however, the only diseases covered by this proviso are those judged severe in accordance with state law. Muscular dystrophy is mentioned in the act as a specific example. A critic of this act points out: (1) this proviso stigmatizes people with this disease and, more generally, (2) "This gives state authorities a monopoly over the definition of disease and disability that is bound to have devastating repercussions on the traditional concepts of health and sickness ... There will be growing social pressure to prevent these diseases at the earliest possible stage — that is, in the test-tube — as more and more diseases are discovered on the sex chromosomes" (Waldschmidt 1991, 216).
28. See Board of the Federal General Medical Council (1988).
29. The raids were carried out simultaneously without search warrants. Twelve persons were taken into custody and some were strip-searched. Some were informed of the reason for their arrest; others were told they were suspected members of a terrorist organization. Scientific material and research work on human genetics, PND, and gene technology were seized, along with audio and video tapes, address lists, personal papers, and other material. "Extreme condemnation" (of genetic technology) was cited as the criterion for the seizure of documents" (Gen-Archiv 1988, 103).
30. Since no recommendations were included in this paper, it is not classified as an inquiry for purposes of this report. Thus, it is not included in the summary grid.
31. Daniels' 1988 study of couples seeking DI in New Zealand found 41 percent believe children should not be told of their DI origins, 37 percent were unsure, and 21 percent thought children should be told. Caldwell and Daniels (1992) believe the trend in New Zealand is toward an increase in couples who intend to tell their DI children about their origins, and the demand for donor information will increase.
32. This observation may be relevant to Canada, where the views of aboriginal people on infertility and adoption as expressed in submissions to the Royal Commission differ from those of other Canadians.
33. Personal communication from Margaret Nixon, 1 November 1991.
34. Personal communication from Margaret Nixon, 1 November 1991. Nixon states the accreditation of New Zealand facilities by an Australian committee is advantageous because "it enables an independent eye to be brought to bear. On social aspects — such as the keeping of donor information for possible later release to the child — the accreditation body reflects New Zealand perspectives by the involvement of New Zealanders."
35. Personal communication from Margaret Nixon, *Extract from Memorandum to the Minister of Justice on Surrogacy* — 3 May 1991.

36. Personal communication from Margaret Nixon, 1 November 1991.
37. For a sampling of feminist opinion on NRTs, see Bunkle (1988); Coney (1985); Rosier (1987, 1989a, 1989b, and 1989c); and Trainor (1988). For a journalistic account of issues around surrogacy, see Cropp (1991).
38. Personal communication from Stuart Edwards, diocesan registrar of the Diocese of Christchurch, New Zealand, 6 December 1991.
39. Personal communication from Cardinal T.S. Williams, Archbishop of Wellington, New Zealand, 28 November 1991.
40. The information in this section is from the Royal Commission's Inquiries Binder on Great Britain unless otherwise specified.
41. There have been inquiries on fetal tissue transplants and PND, but these are outside the scope of this report. They are analyzed in the Inquiries Binder for Great Britain.
42. Note the need to protect the health of women and children is not included in this list.
43. This act is the only piece of legislation examined that seeks to change abortion law while regulating NRTs.
44. The primitive streak is the groove that forms in the developing embryo 14 days after fertilization occurs. It is thought to be significant for several reasons: the conceptus now has two distinct types of cells — those that will develop into the embryo itself and those that will develop into the placenta; the cells that will develop into specific body tissues and organs are now in their correct relative positions; the embryonic disc develops a differentiated, recognizable structure, i.e., a front and back, left and right, top and bottom; and it is probably the last point at which twinning can occur.
45. These provisions regarding DI created difficulties for clinics with large stores of sperm donated before the act came into effect. Because most clinics had not gathered the donor information required by the act when the sperm was originally donated, it became illegal to use it after the act became law on 1 August 1990. The act did not specify a transition period allowing for the use of already-frozen semen stocks from donors who had not provided the necessary information. Consequently, unless the donor could be traced and was willing to supply the information, some clinics were forced to discard thousands of samples of frozen sperm. One clinician stated, "We have in our bank upwards of 1,000 samples of sperm, about 75 or 80 percent of which we cannot use" (Kingman 1991, 5).
46. Spallone believes this action was "prompted by the threat of the Powell bill" (introduced by ardent anti-abortionist Enoch Powell to ban embryo research) (Spallone 1989, 52).
47. The genesis of this term by the VLA is described in detail in Spallone (1989, 52-54).
48. For a sampling of the diversity of British women's opinions on NRTs, see Stanworth (1987).
49. See Bonnicksen (1989, chap. 5) for a detailed description of the development of federal policy on IVF and embryo research and the linking of IVF to public concerns about embryo rights and abortion.

50. Personal communication from Robert Blank, 26 November 1991.
51. Blank describes this coverage in *Regulating Reproduction* (1990, 123-25).
52. These two states are not included in the listing of the American College of Obstetricians and Gynecologists referred to earlier.
53. Additional information on surrogacy in the United States can be found in Andrews (1989) and Cohen and Taub (1989).
54. The American Fertility Society also has published technical guidelines dealing with the type, number, and education of clinic personnel; laboratory requirements; equipment maintenance; embryo freezing recommendations; and safety issues. See American Fertility Society (1991).
55. For discussions of U.S. Catholic perspectives on NRTs and the Vatican's *Instruction on Respect for Human Life in Its Origin and on the Dignity of Procreation*, see Ashley and O'Rourke (1989), Götz (1988), May (1983), McCarthy (1988), Morrissey (1983), Pellegrino et al. (1990), and Shannon and Cahill (1988).
56. See American Fertility Society (1986). These guidelines have been superseded by a substantively similar 1990 version (see United States, Guidelines/Reports No. 1 in the grid legend).

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[See also the documents listed in the summary grid legend]

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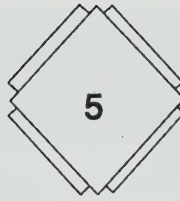
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Part 2:
Assisted Insemination



Donor Insemination: An Overview

Rona Achilles



Executive Summary

Donor insemination (DI) is a type of artificial insemination that has been practised in Canada for several decades and has had little public attention or research interest. It is a reproductive alternative to sexual intercourse chosen by a variety of people for different reasons. The medicalization of DI has encouraged secrecy about the procedure and has allowed neglect of important psychosocial, ethical, and legal issues associated with the process. The author provides an overview of the practice of DI and points to gaps in the knowledge base in research on DI.

DI is generally used in cases of male infertility for heterosexual couples, but may also be used by single or lesbian women who do not have a male partner. The author describes the various methods of insemination, including self-insemination. She points to the relatively low cost of DI compared to other reproductive technologies, as well as the relatively high success rates, since the participants do not necessarily have fertility problems.

In the last decade, the dominant concern in the medical literature about DI has shifted from the legal, ethical, and religious debates of the 1950s and 1960s to concern about transmission of sexually transmitted diseases, and the guidelines of various professional associations have reflected this shift. However, despite the existence of rigorous guidelines, evidence indicates poor adherence to them.

Although record-keeping in DI practice is considered important, it continues to be irregular. Consequently, it is impossible, at this time, to determine the incidence of DI. In the early 1980s, estimates for annual DI births in Canada ranged from 1 519 to 6 000.

The author outlines the history of artificial insemination from its origins in animal husbandry, through the first recorded human artificial insemination in London, England in 1793, to the first recorded use of frozen sperm in the 1940s in the United States. Ethical and legal questions related to DI have made it a controversial procedure, and its eugenic potential has been frequently raised in public debates.

The anonymity and secrecy facilitated by medicalization are the defining social features of DI practice. Very little is known about the experience of DI mothers, their partners, the donors, or the children conceived through DI. The psychosocial issues raised by DI practice have therefore had little or no attention in empirical research. Prominent among the psychosocial issues are questions about the definition of fatherhood, as well as other matters of sexuality, reproduction, and family. Few empirical studies address the issues of the donor's role, the long-term issues for donors, offspring, and recipients, or the impact of DI on the community. The issue of secrecy is a key one and has ramifications for all participants in the procedure.

The medical risks associated with DI practice, ranging from transmission of infection to a variety of reproductive conditions, are outlined. In addition, the results of an exploratory study of Canadian and U.S. sperm banks, gathering data on their advertising, donor screening, counselling, and other practices, are described.

Finally, the author sets out what research needs to be done with regard to the attitudes and practice of physicians and sperm banks, and the attitudes and experiences of the community, donors, recipients, and offspring.

Introduction

The fact that it is no longer necessary to have sexual intercourse to reproduce has introduced changes to the social relationships surrounding reproduction. Although the risks of reproducing are altered through various interventions, therapies, and treatments, it is in the realm of human relationships that the term "reproduction revolution"¹ takes on its greatest significance.

In its original and simplest form, donor insemination (DI) is best described as a social arrangement rather than a technology. It is a simple procedure in which a woman is inseminated with sperm from a man other than her partner. DI does not cure or treat male infertility but circumvents the problem by using a fertile man's sperm. DI is simply a replacement for sexual intercourse. A woman can use DI to become pregnant when her male partner has a fertility problem or to avoid transmission of a genetic disease. A woman may also choose to use DI when she is single or has a

female partner. A woman who has a partner with a fertility problem arranges through a doctor to conceive with a fertile male who will most likely be unknown to her. This situation is the same for couples who wish to avoid the transmission of disease and for single and lesbian women who do not have male partners. The physician becomes a kind of "sperm broker" arranging for conception between two fertile people.

Once referred to as artificial insemination by donor, the insemination is "artificial" only in the sense that sperm is placed in a woman's reproductive tract manually rather than through ejaculation during sexual intercourse. Conception, gestation, and birth occur in the same way as they do in any other pregnancy. Why would a woman choose artificial insemination over sexual intercourse to become pregnant? What are the implications of this choice? Why is this simple procedure controlled by the medical profession? Answers to these questions begin the complicated process of unravelling the medical and social processes that this potentially simple procedure can involve.

DI was first documented in the medical literature over a century ago and has been practised in Canada for several decades. Its existence has risen to public consciousness on occasion through legal cases, through debate about its eugenic potential, or through religious condemnation. Overall, however, DI has been practised quietly and secretly and currently still operates in an almost total legal vacuum. Public attention now directed to the procedure is largely a result of other developments, such as *in vitro* fertilization (IVF) and preconception contracts, whose processes and implications are more publicly visible. The clandestine nature of DI for over a century can be understood, not as a result of the ramifications being so minor, as some have implied,² but perhaps because the ramifications are so great.

Medical control has been established over this simple process. By selecting and screening both recipients and donors, physicians decide who will become parents. In doing so, they may perpetuate cultural mythologies about who is a "fit" parent and who is not. Medicalization of DI also shapes how the procedure is perceived. Sperm is viewed as a "treatment" or a "cure," like a drug, rather than as the reproductive gametes of another human being. Secrecy about the procedure encourages participants to ignore the psychosocial issues, which would become evident if the process were openly acknowledged. Medicalization of DI has also resulted in unnecessary medical interventions on fertile women in order to increase the efficiency of the procedure.

The psychosocial, ethical, and legal³ issues involved in this arrangement are enormous; in fact, it was once possible to argue that the issues involved were predominantly and perhaps solely psychosocial, ethical, and legal rather than medical. Two things have changed this situation. One is the advent of the acquired immunodeficiency syndrome (AIDS), which makes it necessary to freeze sperm for six months in order to test the donor for antibodies to the human immunodeficiency virus (HIV).

The second is a result of the medicalization itself, and is the use of more invasive and complex methods of insemination than the original placement in the vaginal canal — including insemination in the uterus or the fallopian tubes or injection of sperm in the perineum. Both of these changes mean that DI is now, as well as a social arrangement, a more complex technical procedure, with the accompanying risks.

As well as the plethora of psychosocial and ethical issues faced by the participants, there are a number of broader sociological shifts created by this separation of sex and reproduction. In fact, some of our culture's most deeply embedded assumptions, beliefs, and practices with respect to how children are conceived can be altered by DI. These cultural conceptions involve notions of privacy, familiarity, and proximity in time and space associated with reproduction. Practices such as long-distance sperm banking, posthumous insemination, and interventions for preselection of sex⁴ and other characteristics raise many issues regarding the potential for eugenic consequences of DI.

This paper is devoted to a survey of the English-language literature currently available on DI. There are several biases inherent in letting the available literature guide the organization and content of the paper. First, the literature is predominantly medical and all the biases of the medical model are apparent in the literature review. The overwhelming majority of research available is on technical issues related to screening donors or increasing the efficiency of the procedure, or on development of new procedures. The focus of medical research is not on the psychosocial or ethical issues; hence the voices and experience of the participants in the procedure are rarely heard. There is little information available on self-insemination (SI), even in the non-medical literature.

Compared to other methods of assisted reproduction, such as IVF, there has been little research undertaken on the subject of DI. The purpose of this paper, however, is to identify precisely these gaps in the knowledge base and make recommendations regarding future research. As the paper will repeatedly point out, there are almost no data on the practice in Canada.

Description of the Practice

DI is the oldest, simplest, and most widely used of all assisted reproduction technologies. It is potentially a simple procedure, used to achieve insemination and fertilization without sexual intercourse. In its most rudimentary form, a sample of sperm, usually collected through masturbation, is placed in the upper vagina at the time of ovulation. Although the procedure hardly warrants description as a technology, technical expertise is used in medical settings to screen donors, prepare sperm, and, in some cases, enhance the fertility of the female recipient.

Some variations of DI are more complex and employ other therapies and drug treatments.

There are two main types of artificial insemination practised in medical settings. In DI, sperm from a man other than a woman's partner is used. In artificial insemination homologous (AIH), the sperm from the woman's partner is used. In the past, some physicians have practised a third type of artificial insemination called artificial insemination combined (AIC). In this procedure, sperm from one or more donors is pooled with the woman's partner's sperm to obscure the identity of the biological father and encourage the view that the child is the woman's partner's. The objective of this method, however, is no longer considered to be good medical practice. Outside medical settings, women can use SI to become pregnant. SI is similar to DI in that sperm from a man who is not the woman's partner is used, but it is different in that physicians are not involved.

Although DI and AIH are technically identical procedures,⁵ the social features of the practice of DI are distinctive in a number of ways.⁶ Since the source of the sperm in DI is not the woman's husband or partner, the practice violates some deep cultural norms. For this reason, DI is practised through a number of complex social processes, which ensure anonymity between the sperm donor and the recipient(s) and which generally encourage secrecy and confidentiality. All of these aspects of DI — the anonymity, the secrecy, and the confidentiality — are facilitated by the medicalization of a process that is not necessarily medical in nature. A woman could, for example, find other ways to become pregnant by a man other than her husband/partner without going to a doctor.⁷ This is true whether or not she has a male partner. When DI is described in these terms, the psychosocial aspects of the procedure become apparent. Defining and treating DI in medical terms attempts to gloss over some of the more difficult psychosocial issues that the procedure raises. Another consequence of secrecy is that it is impossible to report the incidence of the procedure accurately, since accurate records are not always kept. In addition, systematic follow-up procedures are not in place to monitor any aspect of the procedure, whether medical or psychosocial.

Reasons for Use

Artificial insemination is generally described as a treatment for male infertility. This is indeed an accurate description of AIH, where the sperm is manipulated to enhance its fertilizing capacity. In DI, however, no attempt is made to alter the causes of the infertility in the man himself; rather, his infertility is circumvented by the use of another man's fertile sperm.

AIH may be used when a man is undergoing treatment that might damage his sperm, for example, chemotherapy or pituitary surgery. In these cases, sperm is frozen for future use. Other applications of AIH include its use for cervical factor infertility, idiopathic infertility,

psychogenic or organic impotence, and vaginismus.⁸ AIH is also used for posthumous insemination or after the sperm has been subjected to sex selection techniques, both of which are controversial because of the social implications of these procedures.

The most widely accepted uses for DI are for the absence of sperm (azoospermia) or a low sperm count (oligozoospermia) in the male partner. DI is also employed to avoid transmission of a serious hereditary or genetic disorder (such as Huntington's disease, haemophilia, or Tay-Sachs disease, or for chromosomal abnormalities) or to avoid blood type incompatibility. DI may also be used when the male partner has an untreatable illness, a medical disorder that inhibits ejaculation, or anti-sperm antibodies in his semen, or has had a vasectomy. Single and/or lesbian women may use DI to become pregnant because they do not have a male partner.

Male Infertility

Sterility and infertility are frequently confused as the same thing. Sterility, however, refers to permanent or incurable infertility, and infertility is most commonly defined as the inability to achieve pregnancy after one year of sexual intercourse without contraception. The period of one year is arbitrary and may vary in different contexts.

Research on male infertility has been hampered by the assumption that fertility problems are probably located in the female. There has been much less work on male infertility and, therefore, less is known about the causes and treatment of male infertility than of female infertility.

Good data on the extent of infertility in Canada are not available at present. In the United States, it is estimated that approximately 10-15% of couples experience infertility. Of these, approximately 30-50% of the problems are caused by male factor infertility.⁹ Most male infertility results from abnormal, non-motile, or too few sperm, although retrograde ejaculation and erectile dysfunction are also factors. The potential causes of male infertility are similar to those in the female, some of which are preventable and some of which are not: sexually transmitted diseases (STDs), smoking, alcohol and drug abuse, environmental pollutants, and occupational health hazards. Strenuous exercise, poor nutrition, and stress are thought to be other contributing factors. Other identified factors include mumps and the complications of orchitis¹⁰ (which can cause atrophy of the testis, destroy sperm, or cause a permanent reduction in sperm production), varicose veins (varicocele¹¹) of the testis, prolonged fevers, use of anabolic steroids, and exposure of the scrotum to heat (hot baths, tight clothing or underwear).¹²

Screening

In the past decade, the dominant concern in the medical literature about DI has shifted from the legal, ethical, and religious debates of the 1950s and 1960s to concern about the transmission of STDs to recipients

of donated sperm.¹³ The evolution of this concern can be traced by examining guidelines of various professional associations, such as the American Fertility Society (AFS). In 1980, the major known medical risk associated with donated semen was gonorrhoea. Guidelines for testing of semen and blood of donors were described in two short paragraphs in a small booklet.¹⁴ Fresh semen was typically used, and frozen semen was reserved for situations in which scheduling necessitated its use.¹⁵ In 1986, revised and broadened guidelines of the AFS emphasized the screening of donors for STDs.¹⁶

Although the threat of AIDS was by now a reality and it was known that HIV could be transmitted through semen or blood, fresh sperm was still considered safe. In 1988, the AFS revised its 1986 position on this issue and recommended the use of only frozen sperm. Evidence that as long as six months may be required for the HIV antibody to be detected necessitated new recommendations that semen be quarantined for 180 days,¹⁷ the donor tested for HIV antibodies, and the donor retested before the specimen is used.¹⁸ The 1990 AFS guidelines are the most comprehensive yet, revising and expanding upon previous recommendations.¹⁹ The very fact that two new sets of guidelines and one revision were published by the AFS within four years reflects the rapid evolution of knowledge and the importance attributed to these recommendations.

In Canada, a federal government document published in 1981 established standards for screening of donor sperm,²⁰ and more recent guidelines were published by the Ontario government in 1987²¹ and by the Canadian Fertility and Andrology Society (CFAS) in 1988.²² The most recent guidelines on reproductive technologies published by the Combined Ethics Committee of the CFAS and the Society of Obstetricians and Gynaecologists of Canada (SOGC) essentially refer the reader to the 1988 CFAS report.²³ Guidelines on genetic screening of gamete donors for artificial insemination are being developed by the Canadian College of Medical Geneticists.

The 1987 Ontario guidelines recommend a screening process for donors that is typical of other reports and includes (1) a personal history, (2) physical examination, and (3) in-depth semen analysis that includes microbial screening. Personal histories include information on family medical history, a three-generational genetic history, reproductive history, and mental health history. Educational and occupational achievements, as well as interests, may be recorded to satisfy curiosity or requests from the recipient.²⁴ A maximum age of 50 is recommended by some guidelines²⁵ and a minimum age of 18 by others.²⁶ In some cases, proven fertility is desirable but not a requirement.²⁷ Candidates are excluded for a history of homosexual activity, intravenous drug use, STDs, or having a heterosexual partner from a high-risk group for HIV or with hepatitis B.²⁸

The thorough medical examination and a three-generational genetic history are recommended by most guidelines, which often include a checklist of questions to be asked in their appendices²⁹ (see Appendix 2 for

a sample of questions from the CFAS guidelines). Physical characteristics such as height, weight, build, eye and hair colour, complexion, and ethnic origin are recorded to facilitate matching of donors to recipients. With heterosexual couples, the donor is usually matched to the (social) father, with lesbian couples to the co-mother, and with single women to the woman being inseminated. Blood and semen screening is recommended in order to test for AIDS, cytomegalovirus, hepatitis B, herpes simplex, chlamydia, gonorrhoea, syphilis, ureaplasma, mycoplasma, streptococcal species, trichomonas, and warts.³⁰ It is now considered standard in guidelines to quarantine semen for six months and retest for AIDS and hepatitis B before use for insemination. Recommendations also generally advise that, every six months, donors be retested for HIV, hepatitis B, chlamydia, gonorrhoea, ureaplasma, and mycoplasma.³¹ Semen should also be tested for sperm motility, concentration, and morphology in order to ensure its fertilizing capacity and normality.

Despite the existence of rigorous guidelines for DI in most jurisdictions, available evidence indicates poor adherence to the guidelines. So far, evidence of transmission of pathogens through donor sperm remains anecdotal, since there have been no large-scale studies to systematically evaluate this issue. In fact, typically, the inseminating physician does not follow up on the pregnancy or birth, or on those who fail to conceive, so there would be no way of knowing what had occurred.³² There have been reports, however, of transmission of AIDS,³³ hepatitis B,³⁴ chlamydial infections,³⁵ genital herpes,³⁶ gonorrhoea,³⁷ and ureaplasma infections.³⁸ The importance of laboratory testing of donor semen is emphasized by the fact that most of the donors in these reported cases were asymptomatic at the time of donation.³⁹

Since DI is such a simple procedure, it can be undertaken by general practitioners in their private practices. In these settings, screening is likely to be the least rigorous. A personal communication shows that some fertility specialists in hospitals in Toronto and Montreal continue to use fresh sperm, for example, because they "know and trust their donors."⁴⁰

In the United States, DI practitioners have been surveyed twice. A 1979 survey reported that sperm donors were subjected to "very little genetic screening. Family histories were usually superficial, and biochemical tests were rarely performed. Most screening was performed by physicians who were not trained for this task."⁴¹ Seventy-one percent of practitioners surveyed said they would reject a donor who had haemophilia in his family, even though transmission could not occur if the donor was not affected. Almost 95% said they would reject a carrier of Tay-Sachs disease, but less than 1% indicated that they tested for this disease. Only 28.8% of practitioners undertook any biochemical tests on donors, and these consisted mainly of tests for communicable diseases. Genetic screening relied upon the sperm donor's own knowledge of genetics and his family history. However, a study of prospective donors at the University of North Carolina School of Medicine revealed that the majority of applicants

who had a genetic history indicating an inheritable disorder "did not recognize the condition as being genetic even if the individual had had medical training."⁴² Even medical students may not have the knowledge to accurately self-report on genetic history.

A 1987 survey conducted by the Office of Technology Assessment (OTA) in the United States reported an equally haphazard screening of donors.⁴³ Fewer than one-half of the physicians surveyed tested donors for HIV antibodies; one out of four did not screen for infertility; and one out of five did not screen donors for STDs. Less than half of the physicians screened donors for genetic diseases and, among those who did screen donors, there was the same absence of training in this area as had been indicated in the 1979 study. Twenty-six percent, for example, would have accepted donors with a family history of Huntington's disease, which has a 50% chance of being transmitted to offspring.

There has been no nation-wide study of artificial insemination practice in Canada⁴⁴ and only one small study, in 1984, of Ontario practitioners.⁴⁵ Results from this survey indicated that donor screening varied considerably in Ontario at that time. Fewer than one-half of the physicians did a complete blood count, semen culture, blood tests, or genetic history. Most did semen analysis and testing for syphilis and hepatitis.⁴⁶

Lack of adherence to professional standards is a serious problem in DI. It may be that guidelines require further publicity, directed especially toward DI practitioners who are not fertility society members. The U.S. OTA survey found a positive correlation between the number of inseminations done per year and awareness of professional standards and guidelines.⁴⁷ The use of frozen sperm from sperm banks may circumvent this problem if the sperm bank adheres to professional standards.

Medical evaluation of the female recipient is also recommended in some guidelines. This evaluation may be limited to identification of conditions that are associated with substantial risk to the mother (e.g., severe cardiac, pulmonary, hepatic, or renal disease) and/or to the fetus (e.g., untreated diabetes),⁴⁸ or may include routine medical and reproductive history, physical examination, and lab tests similar to those performed on any woman anticipating pregnancy.⁴⁹ The recipient will also be asked to document the timing of her ovulation for one or two months before inseminations begin.⁵⁰ It is generally recommended that if conception does not occur after four to six insemination cycles, further investigation of fertility, such as hysterosalpingograms and laparoscopies, should be undertaken.⁵¹ Reports in an exploratory study of participants in DI indicate, however, that recipients without evidence of fertility problems may be given infertility work-ups, including the procedures above, and administered fertility drugs, such as clomiphene citrate, in order to regulate ovulation (even when it is not irregular) and to ensure that sperm is not "wasted."⁵² This practice increases the risks of the procedure, as discussed in the section on Medical Risks.

Methods of Insemination

Although the specifics of the procedure may vary by physician and practice, what follows is a basic description of DI in a clinical setting.⁵³ Semen is generally obtained from the donor through masturbation and collected in a sterile plastic or glass jar. Donors are, generally, also asked to abstain from sexual activity for three days before donation, to increase their fertility. If fresh semen is used, it will be allowed to liquefy (approximately 5-20 minutes) and be used for insemination within two hours.⁵⁴ If frozen sperm is used, the same procedure is employed using a thawed sample.⁵⁵ The semen is placed in the vaginal canal through a sterile syringe at the estimated time of the recipient's ovulation. In order to increase the sense of participation by the male partner (if present), some physicians suggest that he place the semen in his partner's vaginal canal.⁵⁶ The recipient may lie with her pelvis slightly elevated for 30-40 minutes after the insemination. Another common method is to put semen in a small cup that covers the cervix; the cup is removed three to four hours later. These methods are called *intracervical insemination*⁵⁷ and represent artificial insemination in its simplest form. As testimony to the simplicity of the procedure, couples may use the cervical cup method at home, with reported very high success rates.⁵⁸

Generally, at least two inseminations are scheduled for each cycle — a day or two before ovulation and on the day of ovulation. Since sperm can remain viable for 48 hours in the female reproductive tract, this allows a potential four-day period for conception. Some clinics may inseminate up to four or five times per cycle to optimize the possibility of fertilization occurring. In the absence of other infertility factors, most DI programs anticipate pregnancy to occur within 6 to 12 cycles.

Current medical literature suggests that the simplest form of artificial insemination, described above, is no longer typically practised and that practice is increasingly tied to more complex, invasive, and sophisticated therapies and technologies. The extent of this, however, is unknown and could be determined only through survey research.⁵⁹ Other, more complex, methods of insemination include (1) intrauterine, (2) direct intraperitoneal, and (3) intratubal or fallopian insemination.

Intrauterine insemination⁶⁰ is generally used with the husband's/partner's sperm to overcome male factor infertility, cervical factor infertility, immunologic infertility, or, in some cases, idiopathic infertility.⁶¹ Sperm is deposited directly in the uterine cavity. Used to overcome the same problems, direct intraperitoneal insemination involves injecting at least six million sperm into the body cavity between the uterus and the rectum.⁶² The most experimental and invasive technique is intratubal or fallopian insemination, which may involve laparoscopy (requiring anaesthesia) to inject sperm directly into the mouth of the fallopian tubes.⁶³ There is also a variant using ultrasound to guide a sliding system of catheters through the cervical canal, uterus, and uterotubal junction, where a concentrated

sample of sperm is injected (no anaesthesia is required).⁶⁴ In these more complex methods of insemination, the recipient is usually given fertility drugs for ovarian stimulation and the sperm is prepared in ways similar to those used with IVF and gamete intrafallopian transfer (GIFT).⁶⁵

Sperm preparation occurs through a variety of methods, including sperm washing, sperm swim-up, and drug treatments. In addition to always being prepared for the more complex methods of insemination, sperm may also be prepared for intracervical insemination in order to increase success rates of the procedure.⁶⁶ Sperm washing is the most common method and is used to separate viable sperm from other elements of the semen, such as prostaglandins, antibodies, and micro-organisms.⁶⁷ It also concentrates viable sperm into a smaller volume. The semen sample is diluted with tissue culture medium, which helps maintain sperm motility, and is then centrifuged at low speed to separate out sperm.⁶⁸ Sperm swim-up or sperm rise is used to concentrate the most highly motile sperm. This is accomplished by placing a layer of proteins (albumin) over the (washed or unwashed) semen, through which the most motile sperm will "swim-up," leaving behind most of the abnormal and non-motile sperm.⁶⁹ Drug treatments may improve sperm motility with the addition of caffeine, arginine, or kinins to the semen sample. Antibiotics may be used to eliminate bacterial infection.⁷⁰

Although DI is defined as a treatment for male infertility, the woman being inseminated becomes the patient in this process. Current medical literature indicates an increasing pattern of additional technologies and drug treatments directed toward the normal female recipient to regulate her cycles. This is particularly true with the more complex methods of insemination described above, but it may also occur with simple intracervical insemination. As well as routine medical examinations similar to those for any woman anticipating pregnancy, a woman without known fertility problems may undergo a variety of procedures, including laparoscopy, ultrasound, endometrial biopsy, sperm antibody evaluation, hormone analysis through radioimmunoassays of blood and urine, and hysterosalpingograms.⁷¹ Drug treatments include clomiphene citrate (trade names Clomid[®] and Serophene[®]), human chorionic gonadotropin (hCG) and human menopausal gonadotropin (hMG: trade name Pergonal[®]).⁷² Clomiphene citrate may be administered routinely with DI to regulate ovulation, since the timing of the insemination is so crucial to the success of the procedure.⁷³ It is not known in what proportion of cases these additional techniques and treatments are used.

In order to observe accurately its timing, in addition to the use of ovulation-inducing drugs, ovulation may be monitored through a variety of methods, including daily charting of the basal body temperature, observing changes in the quantity and quality of cervical mucus, analysis of luteinizing hormone in the blood or urine, and high-resolution ultrasound scans of the ovarian follicles.⁷⁴

Self-Insemination

SI refers to the process by which women, without the assistance of the medical profession, find their own donors and use DI to have children. Women who choose SI avoid the risks associated with becoming a patient. Although SI can be used by anyone who wishes to have more control over the process, it is used mostly by single and lesbian women who may be unable to gain access to medical services. Heterosexual couples may use SI because they prefer to find their own donor.⁷⁵ There is very little documentation of the practice; however, there is evidence of its use in Britain and the United States since at least the late 1970s.⁷⁶ It is likely that SI became a reproductive option for Canadian women at about the same time. By 1982, there were reports of a SI network in Windsor, Ontario.⁷⁷

The procedure itself is simple. The woman inserts a sperm sample into her vagina (near the cervix), usually with a needleless syringe or a similar implement. Some women use turkey basters, simply pour semen into the vagina (using a speculum to keep it open), or put semen into a diaphragm or cervical cap. Insemination should occur at the time of ovulation, with usually two inseminations per cycle.⁷⁸ The difficult part, for most women, is finding a donor. The high prevalence of AIDS in the gay male community has reduced women's options for donors, since gay men frequently acted as donors for lesbian women in the past.⁷⁹ However, some women consider gay or heterosexual men who test negative for HIV infection over a six-month period and who practise safe sex in the interim to be suitable donors.⁸⁰ Women using SI may choose to have a known or unknown donor.

An unknown donor is the preference for many lesbians and single heterosexual women who do not wish to risk a custody battle and/or prefer to parent without the biological father. To ensure anonymity, an intermediary or "sperm runner" is used to transport the fresh sperm from the donor to the recipient.⁸¹ In some cases, concern about transmission of HIV has overridden custody concerns, and an increasing number of lesbians are choosing a known donor — usually a friend or relative of their partner.⁸² The biological father may be involved with parenting the child or may play a more distant role.⁸³

No exact figures on the number of births resulting from SI in Canada (or anywhere) are available. There is, however, agreement that the practice is increasing.⁸⁴ One U.S. estimate suggests that 1 000 to 3 000 children per year are conceived through SI by lesbians.⁸⁵

Cost

The cost of artificial insemination is relatively lower than other new reproductive technologies. A 1986 U.S. survey⁸⁶ reports the range of costs for artificial insemination with the partner's sperm at \$30 to \$50 for intracervical insemination and \$40 to \$200 for intrauterine insemination

with washed sperm.⁸⁷ Donor sperm was reported at \$35 to \$150 for fresh sperm, and \$40 to \$350 for frozen sperm. (Figures represent costs per procedure for the initial procedure and may be less for a series.) The fee paid to the donor was found to range from \$50 to \$100.⁸⁸ In a 1987 U.S. survey, the average total cost of the entire process (including initial consultations, examinations, testing, and inseminations) was reported at approximately \$1 000.⁸⁹ In contrast, for example, the range for IVF is reported at \$775 to \$6 200 and the range for GIFT at \$2 500 to \$6 000.⁹⁰ These figures do not include the cost of drugs. There is no similar survey of infertility services costs in Canada.⁹¹

There are associated costs, so that the total cost of the procedure to the health care system will include diagnostic services (e.g., history and physical examination, screening for infections, ultrasound, hormonal tests, pelvic examinations, and cervical mucus testing) and additional treatment services (such as drug treatments). Most of these will be more expensive than the insemination itself (per attempt). For example, the U.S. survey reports the median cost of DI with frozen sperm at \$100, and the median cost of patient history and physical examination at \$120.⁹² The more complex the method of insemination employed (i.e., direct intraperitoneal or intratubal) and the more additional technologies and drug treatments employed, the more expensive the procedure will be. There are also costs of testing for STDs.

In Canada, medical insurance covers the cost of artificial insemination in seven provinces: Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, Saskatchewan, and British Columbia. Ontario does not cover the fee to the donor.⁹³ In most practices, the donor is either paid a fee or reimbursed for time and expenses; the amount varies.⁹⁴ This cost is usually passed on to the recipients and, in one Canadian exploratory study, had a range from \$15 to \$2 000, with an average cost of \$300 to \$400 per cycle (covering all inseminations, usually two to three per cycle.)⁹⁵ Lower amounts are for fresh sperm, the payment being given directly to the donor, and the higher amounts are for frozen sperm, usually imported from U.S. sperm banks.⁹⁶ The Ontario recommended guidelines for DI report that costs to the consumer range from \$50 to \$150 per insemination (in 1987). The total cost to the consumer will vary according to the number of inseminations undertaken and the cost of any drugs that are used, which may or may not be covered by individual drug plans. In 1988, an Ontario woman attempted to get the Ministry of Health to pay for the cost of donor sperm, reported at \$250 per cycle and a total of \$1 500.⁹⁷

Success Rates

Since both the sperm donor and the recipient are presumably fertile, it should not be surprising that the success rate of DI is relatively high, compared to other forms of assisted reproduction.⁹⁸ Figures commonly cited are between a 60% to 70% pregnancy rate in six cycles.⁹⁹ The take-

home-baby rate is not available for DI because, in general, there is no follow-up by the inseminating physician. In most cases, another physician will deliver the baby, unaware that the conception was through DI.

The rate of success will vary according to the method of insemination, reason for use, factors related to the recipient's fertility (e.g., age), and whether the sperm is fresh or frozen. The relative success rates of fresh and frozen sperm are currently an issue in the medical literature owing to the fact that the new guidelines recommend the use of frozen sperm only (for HIV testing). Initially, much resistance to the exclusive use of frozen sperm arose because success rates were reported to be much lower than with fresh sperm. Recently, however, several studies have reported good success rates with frozen sperm, and methods of improving success rates with frozen sperm are being developed.

A recent Canadian study has reported on a retrospective review of 81 recipients inseminated with frozen sperm in the DI program in Calgary.¹⁰⁰ Although the use of a control group was not possible,¹⁰¹ the reported pregnancy rate of 52% in six cycles is only slightly lower than rates achieved with fresh sperm. The average number of straws (small containers of sperm) used with those who became pregnant is reported at 4.8, slightly higher than with fresh sperm. The sample size (81) in this study was small, but the success rate is similar to those reported by other international studies, which are challenging the belief that success rates are necessarily reduced dramatically through the use of frozen sperm.

Because there is no standardization of success rate measures, it is not possible to compare some figures from international studies.¹⁰² The French federation Centres d'Étude et de Conservation des Oeufs et du Sperme humains (CECOS) collates the results of its 20 centres and provides annual reports. Since 1973, approximately 17 000 pregnancies have been obtained using frozen donor sperm for either DI or IVF. The overall mean success rate per cycle (similar to fecundability rate) has been approximately 8% and the theoretical cumulative success rate 48% at 6 cycles and 66% at 12 cycles.¹⁰³ A study from Hong Kong reports the cumulative pregnancy rate at 6 months as 46.8% and the fecundability rate as 10%.¹⁰⁴ An Australian multicentre study reports a fecundability rate of 12%.¹⁰⁵ Another Australian study reports a cumulative success rate of 61% (after 12 cycles) over a period of 10 years,¹⁰⁶ and a New Zealand study reports a cumulative pregnancy rate of 45.5% for 3 months and 64.7% for 6 months.¹⁰⁷ Sweden reports an even higher success rate,¹⁰⁸ with a cumulative rate of pregnancy of 82% and an average fecundability of 10%.¹⁰⁹

Other factors identified as affecting success rates include the woman's age,¹¹⁰ history of abdominal surgery, menstrual irregularity, use of clomiphene citrate,¹¹¹ low cervical mucous scores,¹¹² endometriosis, tubal polyps,¹¹³ the fertility of the sperm, and the method of cryopreservation.¹¹⁴ As well, the more complex methods of insemination generally entail lower success rates,¹¹⁵ although a recent study reports higher success rates with

intrauterine insemination than with intracervical insemination using frozen donor sperm.¹¹⁶

Record-Keeping

There are some surveys of record-keeping in DI practice. A 1979 U.S. study of 379 DI practitioners¹¹⁷ found that only 36.6% of physicians surveyed kept records on the children and only 30.4% kept records on the donors. In addition, an overwhelming majority (82.6%) were opposed to legislation requiring that records be kept on children and donors. Opposition to record-keeping was based on the need to protect the anonymity of the donor and to ensure the privacy of the recipients. About half of the physicians used the same donor for each insemination in a cycle, but used different donors for each cycle. Only 17.1% used the same donor for every cycle and 31.8% used different donors within a single cycle.¹¹⁸

A more recent (1987) U.S. survey reported that 54% of physicians regularly doing artificial insemination kept records that linked donors with specific pregnancies in recipients, and 71% of these physicians kept records monitoring the number of pregnancies achieved by each donor.¹¹⁹ The likelihood of records being kept increased with practice size and with hospital-based versus private, office-based physicians. The majority of physicians surveyed would not give access to anyone, even when identifying information had been removed: not to donors (76%), to recipients (72%), to partners of recipients (73%), or to resulting children (77%). As well, in most cases, they would not allow access, even without donors' names, to public health departments (67%) or to research scientists (60%). Most (52%) would even refuse a judicial request.¹²⁰

An Ontario survey of 16 physicians using DI reported that a large proportion of physicians use an anonymous linkage system between donors and recipients. Both donors and recipients are notified of this linkage system.¹²¹ There has been no comprehensive provincial or national survey of record-keeping practices regarding DI in Canada.

The most acceptable arguments for complete, personally identified record-keeping are for medical reasons: to facilitate follow-up if genetic problems are detected in either the donor or the children conceived through DI or to monitor the number of pregnancies achieved by one donor. There are also, however, psychosocial and ethical reasons to maintain records linking recipients, donors, and offspring. Children conceived through DI may at some point need, for psychological reasons, to know more about their biological father. This need may conflict with the agreement with the donor about his anonymity, and it may also conflict with the current medical practice. However, we need to evaluate if current medical practice is indeed the most appropriate option.

Australia, for example, in its Infertility (Medical Procedures) Act, "requires the Health Commission to maintain a central register of

prescribed non-identifying and identifying particulars of donors, recipients, donated gametes and offspring conceived as a result of the reproductive technologies."¹²² Non-identifying information is to be accessible to all parties and identifying information is to be available upon written permission of the person inquired about.¹²³ In Sweden, an act was passed in 1984 which requires that information about the donor be registered and records kept for at least 70 years, and the child conceived by DI can have access to these records at the age of maturity.¹²⁴ In Britain, the Human Fertilisation and Embryology Bill proposes legislation that would require establishment of a centralized system of storing information about donors, recipients, and resulting offspring of donor gametes. It would also allow offspring to obtain some information about their biological origins, and it leaves the door open for future legislation regarding identifying information.¹²⁵

The suggested form of records for DI varies. Both Australia and Britain suggest centralized registries,¹²⁶ whereas other reports suggest records be kept in physicians' confidential files.¹²⁷ Levels of information kept may also vary between identifying or non-identifying, with the possibility that identifying information might be kept at the physician's office, for example, and non-identifying information be forwarded to a central (provincial or national) registry. The type of information to be recorded for sperm donors was detailed in the Australian Infertility (Medical Procedures) Regulations in 1988. Identifying information could include name of the hospital, clinic, and/or physician, name of donor, birth date, birth place, full name of donor's spouse, name of donor's parents or other family members, addresses and phone numbers, date and place of donation, and date of receipt by hospital, clinic, or physician. Non-identifying information could include marital status, occupation, religion, ancestry, country of birth, colour of hair and eyes, complexion, build, height, weight, education, personal and/or professional interests, number and sex of children, personal health problems, family history of genetic disorders and/or major health problems, and dates and results of tests, including screening and blood group.

Incidence

It is impossible to report accurately the incidence or prevalence of DI because of the absence of an adequate system of reporting or monitoring. In Ontario, for example, artificial insemination is an item in the fee schedule for health insurance coverage, but records do not distinguish between AIH and DI. Nor do they indicate the number of live births. In addition, many patients prefer to pay cash to the doctor rather than have the procedure recorded in the medical computer system, so that even those records that are available may not represent incidence.¹²⁸ A recent survey

of provincial data bases indicates that New Brunswick (through hospital insurance data) and Saskatchewan (through physicians' claims) are the only provinces that collect data on artificial insemination, and only Saskatchewan distinguishes between AIH and DI in its data collection.¹²⁹ Recommendations in a 1988 Quebec report include the suggestion that AIH and DI be given separate code numbers by the Quebec Health Insurance Board in order to facilitate analysis and observation of the practice.¹³⁰ Without an accurate record of the type of procedure and of each procedure's mean success rate, an accurate estimate of the number of live births is difficult, if not impossible. As a further complicating factor, the extent of SI (DI outside clinical settings) is totally unknown but could be quite substantial, given its relative simplicity and its popularity in the lesbian community (see Self-Insemination).

Although they are not an accurate record of the actual incidence, Ontario Health Insurance Plan¹³¹ figures do show a steady increase over a five-year period from 1979 (6 525) to 1984 (9 973).¹³² The 1987 Ontario guidelines for DI estimate 6 000 artificial insemination procedures per year, with approximately 500 births (DI and AIH).¹³³ There is no indication of what their estimate is based on, but it would appear to be conservative, given the Ontario Health Insurance Plan figures, which, as indicated, are quite low to begin with.

Nation-wide estimates made in the early 1980s have varied from 1 519¹³⁴ to 6 000¹³⁵ births annually from DI, with no estimates of the prevalence of DI births in Canada. A 1988 CFAS membership directory lists 28 clinics providing DI services and a total of 78 practitioners listing artificial insemination (with no distinction between AIH and DI) services. This list refers only to those practitioners who are members of the CFAS; there is evidence of a number of physicians who are not members of this association who also practise DI.¹³⁶

A 1987 U.S. survey estimates that, in 1986-87, 172 000 U.S. women underwent artificial insemination, with a resulting 35 000 births from AIH and 30 000 births from DI.¹³⁷ Other estimates put the total population of DI offspring in the United States at over one million,¹³⁸ and the number in California alone has been estimated at 20 000¹³⁹ (which would appear to be quite low). The British Royal College of Obstetricians and Gynaecologists reports 1 000 pregnancies and 780 live births from DI in 1982, figures which the Warnock report considered to be an underestimate, since they are limited to the number of pregnancies and births of which the College knew.¹⁴⁰ France reports about 1 700 DI births per year (one out of every 450 births), with an estimated total population of 16 000.¹⁴¹ Other international reports estimate the Australian DI birth rate at 2 000 per year, Switzerland and the Netherlands at more than 1 000, and Sweden at more than 300.¹⁴² In 1987, a Japanese report estimated the total DI population at nearly 10 000.¹⁴³

An Historical Perspective

Any discussion of the history of human artificial insemination raises the question of why we know so little about a procedure that has such a long history. Compare, for example, the attention given to IVF in its relatively short history of a little over a decade (the birth of the first child conceived through IVF was in 1978). The documented medical history of artificial insemination is well over 100 years old in the United States,¹⁴⁴ and over 200 years old in Britain.¹⁴⁵ One Canadian source states that the first artificial insemination was performed in Canada in 1968;¹⁴⁶ however, an exploratory study of participants indicates that DI was practised at least as early as 1950 in Toronto,¹⁴⁷ and this is probably a conservative estimate.¹⁴⁸ Despite this rather lengthy background, early history of the procedure is limited to a few well-known documents¹⁴⁹ and incidents that are regarded as turning points in the history of the procedure.

Medical histories generally begin with animal husbandry, where the procedure was first developed.¹⁵⁰ Veterinary history of artificial insemination usually begins in the fourteenth century when, as the story goes, Arabs impregnated mares of their enemies with the semen of inferior stallions.¹⁵¹ Other turning points include the publication of a paper in 1784 by Spallanzani describing artificial insemination in dogs and a monograph by a Russian physiologist, Iwanov, describing large-scale artificial insemination in animals.¹⁵² The benefits of using artificial insemination with animals (particularly cattle) are well established and are the basis of a massive industry, which includes the importance of accurate and comprehensive record-keeping systems, since the primary goal is to improve stock.¹⁵³

The first recorded artificial insemination in humans occurred in London in 1793, when John Hunter is said to have collected sperm from a husband suffering from hypospadias¹⁵⁴ and to have successfully artificially inseminated the man's wife.¹⁵⁵ AIH was also performed by J.M. Sims in the United States in 1866 on six women. Only one woman became pregnant, probably because of Sims's confusion of menstruation with ovulation. Sims apparently later condemned the procedure as immoral medical practice.¹⁵⁶ Artificial insemination with donor sperm was practised by Robert Dickinson in 1890 "in great secrecy."¹⁵⁷ A 1909 report published an incident that had taken place 25 years earlier,¹⁵⁸ confirming that DI had begun in the United States in the late 1800s. From its earliest records, DI is marked by secrecy.

In the 1909 report, a physician tells the story of the insemination of a merchant's wife with the sperm of a "hired man," also referred to as the "best looking member" of the physician's medical class. Neither the patient nor the merchant was initially told about the procedure. When the woman became pregnant, the doctor, William Pancoast, told the husband, who requested his wife not be told. Addison Davis Hard, the author of the 1909 article, and presumably also the "hired man," later "shook the hand" of his

offspring at age 25.¹⁵⁹ The majority of his article addresses the eugenic benefits of DI.

Another crucial development in the history of artificial insemination is the history of freezing or cryobanking. Although Spallanzani succeeded in freezing and preserving human semen as early as 1776, the first recorded use of frozen sperm for insemination was in the 1940s and 1950s in the United States.¹⁶⁰ Sperm banking was slow to develop, however, and 20 years after its discovery only 571 births had resulted from frozen sperm¹⁶¹ compared to, for example, 200 babies born through IVF after only a six-year history.¹⁶² It is generally accepted that the demand for artificial insemination increased in the 1960s because of other trends, including the difficulty in treating male infertility and the reduction of babies available for adoption.¹⁶³

Religious and mythological sources are suggestive of a much longer history going back to a second-century Talmudic story about conception achieved in bath water contaminated with semen.¹⁶⁴ Another story tells of a thirteenth-century rabbi warning women to be careful of bed linens on which a man other than their husband has slept.¹⁶⁵ As one author argues, this non-medical history suggests that artificial insemination has existed in the public consciousness longer than the history of medical practice would indicate¹⁶⁶ and also points to the existence of SI outside of medical practice.

The secrecy about artificial insemination (especially by donor), and the relative absence of regulation of the practice,¹⁶⁷ can be attributed in part to the rather contentious and sensitive social issues that it raises. A brief look at the history of legal cases indicates that the procedure has raised questions about adultery, legitimacy of the child, inheritance rights, and the issue of uncertain fatherhood, as well as the donor's rights and duties.¹⁶⁸ Historically, the social acceptability of the procedure has therefore been very low.

Public acceptance can be traced through a number of inquiries into artificial insemination conducted in Britain. A 1948 report declared it a "public offence."¹⁶⁹ In 1960, it was declared "undesirable"¹⁷⁰ but not illegal, and in 1973, it was recommended that it be covered by the National Health Service.¹⁷¹ Despite the legitimacy of health insurance coverage in most jurisdictions, DI is still perceived in some quarters as a threat to the family, in particular to a specific image of the family as a heterosexual couple raising its own biologically linked children.¹⁷² The advent of single women and lesbian couples having children through DI is clearly perceived as a threat to the traditional image of the family.

In addition to threatening traditional mores surrounding sexuality, reproduction, and family life, DI has, historically, been supported by groups wanting to improve the human race through selective breeding.¹⁷³ The debate about DI and its eugenic potential has been ongoing since the first publication about DI appeared in 1909¹⁷⁴ and has surfaced with several incidents about DI that have reached the public.¹⁷⁵ Most recently, the issue

has been raised again by the creation of a sperm bank in the United States that banks only sperm from "unusually well-educated donors." Popularly referred to as the "Nobel-Prize Winners Sperm Bank," the Repository for Germinal Choice is funded by the Foundation for the Improvement of Man¹⁷⁶ and represents an extreme position in the eugenics debate and in DI practice.

Psychosocial Issues

DI makes it possible for a man and a woman who may be complete strangers to conceive a child together. The fact that the biological parents of a child may have never even met has radically changed the social relationships surrounding reproduction for DI participants.¹⁷⁷ A woman who wishes to become pregnant through DI must find a fertile male who will supply her with sperm. The complicated manner in which this potentially simple social exchange takes place indicates the sensitive psychosocial issues it involves. Sperm, despite its apparent availability, is not easily acquired. The barriers, however, are psychological and social and most women using DI will go to a doctor rather than ask a friend or find their own donor.

The anonymity and secrecy facilitated by medicalization are the defining social features of DI practice.¹⁷⁸ These and the confidentiality of the doctor/patient relationship have hindered research on participants in DI. Research from the perspective of the participants is striking by its absence. Very little is known about the experience of DI mothers, their partners, the donors, or the children conceived through DI. Although DI appears to be becoming more socially acceptable, the absence of a language to describe the relationships created through the procedure indicates a continuing absence of cultural legitimacy.

The term *parent*, whether it refers to a mother or a father, typically refers to an individual who embodies both the biological and social components of the parental role. Those who conceive through "natural" reproduction are expected to rear their biological offspring. When this is not the case, as with adoption, foster-parenthood, or step-parenting, parental roles are modified by an additional adjective or descriptor. Biological parents are described as, for example, *birth*, *original*, *natural*, or sometimes *real* parents. Social parents are described as *adoptive*, *foster*-, or *step-parents*. Successful use of DI severs the link between biological and social fatherhood. What has been culturally assumed to be one role and one person is now two roles and two people. Since DI is rarely openly acknowledged, however, there is no common or shared language to describe these two distinct paternal roles. This paper uses the term *biological father* to describe the sperm donor and *social father* (or simply father) to refer to the male who will raise the child.

Prominent among the psychosocial issues raised are questions about the relationship between, and the meaning of, *biological* and *social* fatherhood. The biological father of a child conceived through DI is a sperm donor. If records are not kept, linking the donor to the mother, or if records are kept but not accessible, DI offspring may never have information about their biological father.

The question as to who is the father of a child evokes powerful cultural imagery. For example, it has been the subject of many Greek and Roman myths. In the 1990s, it remains a recurring and powerful image — still the subject of much literature and appearing in popular mythology through soap operas and popular novels. But DI offspring may be unaware that the man who raises them is not their biological father. Secrecy about the procedure is actively encouraged by some physicians, and a couple may decide to keep the origins of their DI child(ren) to themselves. They may not even tell other family members. What does it mean to a man's emotional life to have a purely biological link to a child? What does it mean not to have a biological tie to a child for a man who will raise a child "as his own"? Why does it matter who is the biological father? Although some argue that it doesn't matter, the energy invested in keeping the secret suggests that it matters very much.

Religious and cultural factors play an important role in understanding people's responses to the experience of infertility and to the procedure and its attendant therapies. There is now a small body of literature that describes the responses of different religions;¹⁷⁹ however, cultural differences in relation to infertility and reproductive interventions remain largely unexplored. This section describes the psychosocial issues for participants in DI and reports on the available research literature. The majority of the discussion focusses on married heterosexual couples using DI in a clinical setting, since this is what has been reported on.

Community Attitudes

Surveys of community attitudes regarding DI are few.¹⁸⁰ Studies of attitudes toward new reproductive technologies more frequently focus on specific populations, such as the infertile or recipients of particular technologies, such as IVF. The low public visibility of DI contributes to this lack of attention. IVF and preconception contracts have received much more public attention in their short history of a little over a decade than artificial insemination has in over a century of practice. A recent study of Canadian attitudes toward new reproductive technologies makes only one mention of artificial insemination in its summary. Approximately 27% of those polled had an awareness of artificial insemination, whereas 37% had an awareness of IVF.¹⁸¹ It is possible that public comprehension of the technology is low as well, so that any surveys of community attitudes would have to take this into account.

Australian researchers have undertaken two major studies of community attitudes. In 1983, Rowland and Ruffin reported on attitudes of 104 (52 male and 52 female) Australian residents to AIH, DI, IVF, and adoption. Two-thirds of respondents did not know what AIH and DI entailed. Support for alternatives to infertility were found to be as follows: adoption, 91%; AIH, 94%; IVF, 86%; and DI, only 52%, with 34% indicating they did not approve.¹⁸² The authors speculated that this lack of support for DI was a result of the absence of public discussion about it. It is of interest that only 61% felt that DI was moral, compared to 87% for AIH and 76% for IVF. Those who answered negatively were questioned further. The issue of adultery and the use of another man's sperm were the main reasons given for the perception of immorality.

In 1985, Rawson, another Australian researcher, reported findings from a national sample of 989 respondents as well as 279 opinion leaders on attitudes to DI alone.¹⁸³ Results indicated that Australians, overall, approve of DI for married couples with medical problems: 70% approved, 17% disapproved, 5% needed to know more, and 8% had no opinion. Male (71%) and female (70%) approval responses were remarkably similar. There was a decrease in approval with increasing age, but no difference between the responses of single or married respondents. Approval also increased with an increase in educational status, but there was no difference in approval between urban and rural areas; non-Anglo-Saxon groups indicated lower levels of approval than did Anglo-Saxon groups.

Two U.S. studies indicate a low level of social acceptability of reproductive technologies among college students. Matteson and Terranova report on a 1977 study of 45 U.S. female undergraduates concerning new reproductive techniques.¹⁸⁴ The majority of subjects would choose for themselves techniques that maintained genetic relatedness of both partners and would seldom use techniques that employed donor eggs or sperm. The majority, however, would allow others to use any of the techniques (which included sex predetermination). The authors speculate that most women would reject the use of a "foreign" egg because of a preference for biological relatedness (not a rejection on moral grounds, since they would allow it for others). A 1988 study of college students of both sexes indicated no difference by sex on this issue, but indicated that blacks are more negative than whites about the technologies.¹⁸⁵ This much larger study of 733 students included both black (248) and white (485) students and was analyzed by race and religious preference as well as by sex. Adoption (included in the study as another method of acquiring children) was the most acceptable method, with 89.8% of whites and 78.3% of blacks stating that this was acceptable. The various reproductive technologies were ranked in descending order of preference for whites and blacks, respectively: AIH (80.4%, 66.8%), IVF (56.9%, 50.7%), embryo transplant (28.3%, 20.3%), DI (23.0%, 14.4%), and surrogate motherhood (16.1%, 13.4%). Women were more accepting of adoption than men (90%, 82%). There are no Canadian surveys on attitudes of the general public to DI,

with the exception of the above-mentioned poll, which reports only on public awareness of the procedure.

Despite disparate populations and methodologies, there are some common threads in these studies. The first is that DI has a low public visibility. In general, the public does not understand what the procedure entails, either technically or socially. This means that public education has to accompany any attempt to determine public attitudes. Secondly, DI is among the least acceptable of the alternatives to infertility. It shares this status with other methods of assisted reproduction which use donor gametes. A strong cultural emphasis on the importance of the biological tie between parent and child inhibits acceptance of these techniques.

Donors

Although sperm donors are frequently compared to blood donors, the two bear little resemblance when their roles are examined closely. Unlike the blood donor, whose role is perceived as an honorary and public one, the sperm donor will receive no badges for public service. His role is perceived as a shadowy one. Asked to donate gametes for the conception of a child within a family, sperm donors are important players, but they have no identity within the family.¹⁸⁶ In contrast, women who donate eggs are interviewed openly for newspaper and magazine articles.¹⁸⁷ One study found that couples undergoing DI rejected the idea of using the husband's brother as a donor, while couples using egg donation generally found the idea of using a sister acceptable.¹⁸⁸

The expectations of a sperm donor are conflicting: he is asked to be of good character, an altruist, but simultaneously to be willing to breed children in whom he has no interest and for whom he has no responsibility. Within the DI family, he may be perceived as a threat to the marriage and to family stability. He may remind the father of his own failure to reproduce or confuse the child about his/her parentage. It is not surprising that so few studies are available on sperm donors and how they feel about their role.

In general, the medical literature on donors focusses on the technical issues, such as screening, and there is very little discussion of the psychosocial aspects of the donor's role. A 1981 Health and Welfare Canada report commented: "There is virtually no information on the variety of emotions and attitudes that must occur among young men who become sperm donors. Is the donor fearful of disclosure of his identity? Is it correct to assume that donors are generally motivated by the unselfish desire to help infertile couples?"¹⁸⁹ A decade later, there are still only a few empirical studies that address these issues.¹⁹⁰

It is surprising, given the practical importance of maintaining a donor pool, that there is very little information in the medical literature even on the issue of recruitment. An exploratory study of sperm banks undertaken for this report indicated that donors in Canada are recruited through

university newspapers and through physicians' personal contacts (see Sperm Banks). The common stereotype of donors is that they are all medical students, which, according to the limited data available, is not entirely accurate internationally. Donors are more likely to be medical students when the sperm bank is affiliated with a teaching hospital. In Australia, Rowland found that donors were from a variety of backgrounds with diverse educational levels: lower high school (6%), high school certificate (29%), university degree (37%), college diploma (9%) and post-graduate work (13%).¹⁹¹ Occupations of donors ranged from a gardener to a computer analyst. Of 67 respondents, only 1 was a medical student and 1 a science student. A similar diversity was found by Nicholas and Tyler.¹⁹² In Daniels's study of 37 New Zealand donors, 23 were in the professional and technical classification, 6 were students, 5 were in services and sales, and 2 were in agriculture and production.¹⁹³ An exploratory Canadian study reported donors from varied backgrounds, among whom there were no medical students.¹⁹⁴ The *CFAS Guidelines for Therapeutic Donor Insemination* identify the following recruitment groups for DI:

- (a) medical students,
- (b) other members of the university/teaching hospital community,
- (c) general population (media publicity or word-of-mouth: infertility support group activity),
- (d) pre-vasectomy patients,
- (e) partners of tubal factor IVF or tubal ligation patients [with a warning that approaching infertility patients may be considered insensitive].¹⁹⁵

The use of frozen sperm means that practitioners who use sperm banks do not have to do their own recruitment. Overall, the stereotype of the sperm donor as a medical student who donates for financial reasons and is disinterested in his possible offspring and their well-being is not supported by what data are available. Reasons for donating are reported as primarily altruistic ("to help other people"), with a small proportion in each study stating that acquaintance with an infertile couple had influenced their decision. Secondary motives include the desire to find out about their own fertility and to father children; a small minority state financial motives.¹⁹⁶ In an exploratory¹⁹⁷ study, a small number of donors stated a sexual/erotic motive for donating.¹⁹⁸ Very few stated payment as a sole motive, and further questioning revealed that donors, in general, did feel they deserved some compensation for time and expenses but would have continued to donate without payment.¹⁹⁹ In the words of one donor (bracketed material is the interviewer):

[Is the payment important to you?] No, but it sort of was in a way in that I had to take time off work and the time I took off work was without pay. I would lose the pay, so it kind of made up for that and it also paid the gas to go down and back ... but it wasn't the key fact. [Would you

donate if you were not paid?] Yes. [Why?] Well, there are a lot of reasons for that, you know, I suppose you could call it the milk of human kindness sort of thing. I'd like to help somebody if I could. It's like being a blood donor as far as I'm concerned. It's the same thing. Why do people donate blood? But, also ... I wanted to get my lineage out. It's really not important what the name is ... you know ... but, I think I would like to have my genes carry on, you know, heredity. [But you already have two children through your marriage, right?] Yes, but it ... you know ... it gives you greater chances doesn't it?²⁰⁰

This donor states another motive unexplored in the literature on sperm donors — having his “genes carry on, you know, heredity” — suggestive of an existential dimension to reproductive behaviour. If donors seek immortality through sperm donation, then infertility — the inability to reproduce — may remind individuals of their mortality.²⁰¹

The issue of payment to sperm donors (and gamete donors in general) is debated quite frequently in the literature and there are a variety of positions on this issue in different jurisdictions. France, for example, has long had a policy that sperm donors should not be reimbursed in any way.²⁰² Annas has suggested that U.S. sperm donors are more appropriately termed *sperm vendors*, since they receive money for their sperm donation.²⁰³ Current guidelines generally stress that payment is compensation for time, expenses, and inconvenience and not payment for the human genetic material.²⁰⁴ The amount of payment is generally between \$15 and \$75, an amount intended to compensate the donors without creating compensation as a motive to conceal information.²⁰⁵ The recent report from the Combined Ethics Committee of the CFAS/SOGC endorses “the payment of gamete donors to reimburse them in a reasonable fashion for the costs and inconvenience of donation and any screening procedures which are essential to the safe operation of donor gamete programs.”²⁰⁶ Some commentators, however, raise the question of whether payment eventually leads to differential valuing of different gametes²⁰⁷ — meaning sperm from someone with socially valued traits, such as high intelligence or athletic skills, may cost more than sperm from someone less accomplished.

There is also a concern about the possibility that offspring (biological half-siblings) will grow up, meet, marry, and have children together. Limitations on the number of children conceived by one donor is, therefore, an important aspect of safe DI practice. Recent Canadian guidelines are silent on this issue, with the exception of a Quebec report that suggests a limit of six pregnancies or 30 utilizations of sperm from a specific donor.²⁰⁸ The 1990 AFS guidelines set the limit at no more than 10 pregnancies, except in the instance of isolated subgroups.²⁰⁹ The American Association of Tissue Banks suggests that it is crucial that the number chosen be calculated in relation to the size of the recipient community.²¹⁰ Limiting the number of children conceived by each donor presumes that there are

systematic follow-up procedures in place and that good record-keeping practices are used (see Record-Keeping).

There is little empirical data on the long-term issues for donors, since donors have been studied only at the time of donation. An exploratory study has indicated that the feelings and attitudes of sperm donors may change over time. They may, for example, eventually desire more information about the results of their donations. This may include information about the number of children who were conceived with their sperm, and they may maintain an interest in their offspring's well-being as well. As one donor put it:

At 20 or 22 or something ... you don't think of anything at the time. Well, I don't know quite how to say ... you just don't think that 20 years from now that you could have somebody out there. You just more or less do it and forget about it and then three years later you think back about it ... [it changed for me] when I saw ... my first son.²¹¹

The 1990 CFAS/SOGC guidelines make precedent-setting recommendations on this issue in North America when they "recommend that gamete donors be provided with medical and genetic information about children born of their gametes if requested or if such information might have a bearing on the future health or reproductive choices of the gamete donors or their natural offspring. When the children reach the age of legal competence, exchange of identifying information may occur if both parties are agreeable."²¹²

Different studies on donors' attitudes toward their anonymity show different results. Australian and New Zealand studies have, in general, found that a substantial portion of donors would be willing to be identified to their DI offspring when they reach age 18.²¹³ In an Australian study of 67 donors, "60% ... would not mind if their AID offspring contacted them after the age of 18 years to find out about family history and other details."²¹⁴ In a New Zealand study of 37 donors, almost one-quarter would still donate under conditions in which they could be traced in the future, and a further 30% were not sure.²¹⁵ Less positively, Handelsman et al. found in a study of 75 sperm donors overwhelming opposition to the disclosure of identifying information, but 43% would accept the disclosure of non-identifying information.²¹⁶ But a British study undertaken after publication of the Warnock report found that patients, health care professionals, and donors were unanimously opposed to such a change.²¹⁷ Research on this issue has, so far, been limited to donors who are part of DI programs where anonymity of the donor is the practice. It is possible that a different pool of donors would have different responses.²¹⁸ In the United States, the Sperm Bank of Northern California successfully solicits donors who are willing to be contacted by their offspring and this fact is known when couples choose whether they will use this source.²¹⁹

Recipients

Those who require medical assistance to have children (for medical or non-medical reasons) may have to meet certain eligibility criteria to have access to these services. This process imposes a form of discriminatory selection similar to the process for those who wish to adopt.²²⁰ A major difference from adoption, however, is that, with assisted reproduction, physicians generally make these decisions on an ad hoc basis or according to their own values. Eligibility criteria or screening procedures generally involve marital status, sexual preference, age, and/or psychological criteria intended to assess the ability to parent. Recipients for DI may be a married heterosexual couple, an unmarried heterosexual couple, a lesbian couple, or a single woman.

In a survey of Canadian DI practitioners, Freedman et al.²²¹ found diversity within the profession about non-medical patient selection criteria (see Table 1). Although there was little consensus among the surveyed practitioners, a majority would reject a woman with no male partner (66%) or with a stable lesbian partner (76%). A small number would not accept a woman who is over the age of 35 (11%), married for less than two years (10%), or with a common-law partner (8%). Freedman et al. also report that these decisions are made by individual physicians and that larger clinics tend to be more tolerant, particularly if they have more applicants and are affiliated with a university.

Different jurisdictions have taken different positions on this issue of access. The Ontario Law Reform Commission recommends (in regard to all assisted reproduction technologies) restriction to "stable single women and to stable men and stable women in stable marital or nonmarital unions."²²² Defining what is meant by "stable" is problematic and might require, for example, psychological testing of all applicants. The Quebec report recommends (by the majority of members) that "the clientele for artificial insemination be defined in such a way as to include couples ... and also women living alone, regardless of their status."²²³ In Sweden, only married women or women cohabiting with a male can use DI services. The motivation for this is stated as being "a child needs both a mother and a father."²²⁴ The British Warnock report states that as a "general rule it is better for children to be born into a two-parent family, with both father and mother."²²⁵ The recommendation of the Combined Ethics Committee of the CFAS/SOGC emphasizes the physician's obligation to refer patients to another physician when "on grounds of conscience" she or he is unable to treat a patient.²²⁶ Whatever the position taken, the issue of access to DI (and all assisted reproduction technologies) raises the ethical (and legal) question of whether individuals have a right to reproduce and whether this right includes access to medical services to do so.²²⁷

Table 1. Reaction of DI Clinics in Canada to Selected Characteristics of Female Applicant

Female applicant	Accept (%)	Unsure (%)	Reject (%)
Age > 35	86	3	11
Married less than 2 years	85	5	10
Common-law partner	84	8	8
Applicant would have high-risk pregnancy	77	6	17
Applicant has been refused by adoption agency	73	16	11
Age < 20	67	14	19
Applicant's partner has significantly reduced life expectancy	59	19	22
Applicant or partner has criminal record	21	33	46
Economic incapacity to support children	20	26	54
No male partner	18	16	66
Stable lesbian partner	8	16	76
Pregnancy high risk to applicant	8	8	84
Mentally unable to support children	3	3	94
History of child abuse/neglect	-	5	95

Source: B. Freedman et al., "Non-Medical Selection Criteria for Artificial Insemination and Adoption," *Clinical Reproduction and Fertility* 5 (1987), 57.

Those using assisted reproductive techniques have requirements placed on them that are not imposed on those who can reproduce "naturally" or without medical assistance. Because of their infertility or lack of male partner, the act of reproducing is now in the public realm and additional responsibilities and duties are imposed on them.

The need for counselling is another issue that is generally advocated for participants in assisted reproduction. Counselling could serve two functions: (1) to screen applicants considered psychologically unfit for parenting, or (2) to provide support for the emotional processes necessary for decision making and to ensure informed choice. The screening function

of counselling could be undertaken through psychological testing, and applicants could be accepted or rejected on the basis of results.²²⁸ This relates to the issue of access discussed above. It is the second function of counselling — to provide support and ensure informed choice — that is discussed here.

A major counselling issue for heterosexual couples who are using DI to circumvent male infertility is the coming to terms with the infertility itself. Berger²²⁹ concludes that decision making in DI is a two-stage process requiring the couple to deal first with the infertility (the loss of the ability to have a child biologically related to both parents) and, subsequently, with the decision to use DI to have a child.²³⁰ In a study of 120 couples, Berger and his colleagues found that "an interim period of three months or longer between the discovery of infertility and the application for DI was associated with less marital discord, indecision and symptoms in the applicants, than was a hastier decision to undertake it."²³¹

Study of the psychological and emotional processes of male infertility appears to have suffered from the same inattention as have the physiological aspects of male infertility. There is comparatively little research on the psychosocial responses of males to infertility, compared to females, who are more often the focus of reproductive research in general. However, the diagnosis of infertility is clearly associated with loss of self-esteem and depression and may be viewed as a blow to masculinity, just as donors report their fertility is associated with "proof of manhood, virility, and masculinity."²³² Within the context of DI, infertility may also be associated with guilt about the inability to give one's partner a child. An Israeli study of 44 DI couples found that 80% of the men had guilt feelings about their infertility stemming from feeling that their manhood was lacking, that they were not "real" fathers, and that they were responsible for their wives' needing to undergo treatment.²³³ Another study found that a diagnosis of male infertility was more likely to be associated with marital difficulties than if the infertility was located in the female or in both partners.²³⁴ Counselling could encourage couples to acknowledge and grieve the loss of their shared biological child. Since infertility is not an issue for single women or lesbian couples undergoing DI, this grief process is not part of their experience. The following discussion centres on heterosexual couples, since this is the focus of the medical literature and of research studies.

Counselling to ensure informed choice means that clients would receive complete information about the risks and benefits of the proposed procedure as well as the risks and benefits of any alternative procedures or interventions.²³⁵ For DI recipients, this includes considering child-free living, adoption, or, in some instances, use of IVF for male factor infertility.²³⁶ Counselling is needed particularly when the DI procedure follows quickly on the heels of a diagnosis of infertility. Among the issues to be raised for recipients are legal concerns,²³⁷ the method of donor selection, the potentially contentious issue of using another man's sperm,

donor anonymity, the issue of secrecy, medical risks of the procedure (e.g., infection), success rates, the failure to conceive, and the perinatal risks common to all pregnancies.

The psychological impact on the female recipient of DI must also be taken into account. A woman undergoing DI in a medical setting is attempting to conceive a child with the sperm of a man who is unknown and, most likely, unknowable to her. This reproductive arrangement is unique, since a reproductive partner is usually someone with whom a woman is intimate and, in all other cases, at least someone she has met. Two psychoanalytically oriented writers in the United States report that female recipients of DI must suppress fantasies about the donor,²³⁸ and one-third in a study of 43 were preoccupied with the donor's looks and personality.²³⁹ Experiencing DI entirely as a medical procedure may be a way of coping with the stress of what one writer calls the "anonymous pregnancy."²⁴⁰ The anonymity of the donor ensures distance from the man who provides sperm for her child. In the words of one DI mother:

AID is a clinical treatment, *it's like an allergy shot*, there is no personal contact, there is not another person, it is just a treatment. It's just a means to an end [emphasis added].²⁴¹

In an exploratory study of DI participants, female recipients identified the isolation stemming from the secrecy of the procedure as a major stress. The majority felt a need for support in raising their DI children, especially if they were keeping their children's origins secret.²⁴² As one DI mother commented:

One of the hard things about having done this was not knowing anybody else in the same situation to talk with and to discuss certain matters that [arose] with us ... because you can't talk to other friends or anybody, really, and I really don't know how to ... It would be good for my husband to talk to another man who for infertility reasons has done this too, rather than just me ... I mean, you feel so terribly isolated.²⁴³

Since secrecy is generally not an issue for single women or lesbian couples, who are generally open about their children's origins, the stress of keeping the secret is not part of their DI family experience.

The literature on the impact of DI on the male partner of the recipient of DI focusses on the experience of male infertility, which may arouse feelings of inadequacy, shock, and personal violation.²⁴⁴ He may have strong feelings about his partner being inseminated with another man's sperm and carrying and bearing a child to whom he is unable to be a biological father. One writer warns that the child may serve as a constant reminder of the man's infertility.²⁴⁵

The importance of matching the physical characteristics of the donor and the male partner becomes apparent in this context. The function is to present the image of a biologically linked family. It is not clear how effective this strategy is for the social father. Similar to adoptive parents who are not the biological parents to their children, a DI (social) father may

experience problems of "entitlement," that is, he may feel he is not entitled to parent or discipline children who are not really his (biologically).²⁴⁶ In the words of one father of two DI children:

There are a lot of little day to day experiences that come up that I tend to brush off fairly easily with or without humor, in my own mind. The talk of family resemblances is always coming up and I don't mind it really but it always makes me feel like I'm not being honest with the person who may be spouting off on how my daughter looks just like me ... Something is always around to remind you that your relationship with your children is not quite what people think ... Logically, yes, — I'm very much their father, they are my children, etc., but emotionally it's never concrete, never settled. I'm not sure I'll ever be totally convinced that I'm 100 percent their father.²⁴⁷

Clearly, this is an area where counselling could play a role in clarifying the different roles in parenting created through DI.

Despite the plethora of complex dynamics set in motion by DI, there is little research available on the impact of DI on a marriage. What is available shows surprisingly positive outcomes; studies reporting negative outcomes are largely anecdotal.²⁴⁸ Rosenkvist,²⁴⁹ reporting on a Danish study of 48 couples attempting DI, found only 4% (two couples) had divorced after two years. Both of the couples who had divorced had not achieved a pregnancy. Emphasizing the need to study couples who reject DI or who fail to conceive, Rosenkvist observes that "as compared to successful AID-couples, couples in whom the woman did not become pregnant have more severe emotional reactions and a more problematic development of the partners individually as well as mutually."²⁵⁰ Norwegian researchers compared 227 DI mothers with a control group and found no significant difference in the separation rate between the two groups.²⁵¹ Berger et al. speculate that the bond of secrecy may stabilize the marriage and ensure loyalty — particularly for the child(ren)'s sake.²⁵² Other positive outcomes include reports that recipients who return for a second child are satisfied²⁵³ or that the very fact that they return for subsequent children is an indicator of satisfaction.²⁵⁴

The indicators used to suggest positive outcomes are therefore (1) the continuance of the marriage, and (2) return for a subsequent DI child. Given the stress of infertility, the problematic nature of the DI solution, and the demand for secrecy, the issue of stress on the marriage may require more in-depth study. British researchers suggest that this divorce rate is lower than that of the general population possibly because couples who are willing to undertake DI may be more committed to each other in the first place. Those who are less committed and who encounter infertility may divorce rather than use DI.²⁵⁵

Secrecy

Secrecy is a key issue in DI practice — whether to tell and, if so, who to tell (family, friends, the children?). If recipients choose to be open about the procedure, how and when the telling should occur are largely unanswered questions that would benefit from long-term follow-up research on DI families. Research on recipients shows their marked preference to keep the procedure secret.²⁵⁶ However, most research is conducted at the time of insemination. In an exploratory study, several recipients reported that problems arose that could not have been foreseen and it became impossible or inconvenient to keep the secret from family, friends, or the children.²⁵⁷ In most instances, when adult DI offspring are informed about their origins, it is because of a family crisis or because the secret has accidentally leaked out.²⁵⁸ Even though recipients express a preference for secrecy at the time of insemination, according to small follow-up studies, they usually tell someone — another family member or a friend — and they report that the secret is difficult to keep.²⁵⁹

Various reasons have been put forward to explain the importance of the secrecy in DI practice: (1) to hide the infertility of the male, which is culturally associated with failure of masculinity, impotence, and loss of self-esteem;²⁶⁰ (2) to make sure that the children won't feel "different"²⁶¹ and to side-step legal issues; (3) to preserve an image of the family as biologically linked;²⁶² and (4) to avoid the difficulties of acknowledging the division of parental roles into biological and social fathering.²⁶³ All of these factors operate in generating the need for secrecy, which, until very recently, was encouraged in the medical literature and in procedural guidelines.

In general, the need for secrecy is supported by the medical and legal profession. Openness about the procedure is supported by professionals with experience in adoption — psychologists, social workers, and sociologists. Adoption is frequently cited as a social precedent for DI. Those supporting openness fear that the same mistakes that were made with early adoption practice are being repeated. Secrecy about adoption proved to produce problems, and adoption policy now supports openness with the child, the community and, sometimes, even with birth parents.²⁶⁴ The comparison of DI to adoption is problematic, since there are significant differences, as well as similarities (see Offspring).

In the last decade, however, a shift has occurred in medical professional guidelines from sanctioning secrecy completely (including not telling family physicians or the physician who delivers the baby) to a position of uncertainty about this issue.²⁶⁵ Recent Canadian guidelines go further and state that "[A]dverse interpersonal relationships may develop in the long term because of the perceived need to maintain secrecy ..."²⁶⁶ There has also been a move internationally to be more open about DI practice. Legislation in Sweden and Australia as well as pending legislation in Britain ensure that records are kept linking donors with their offspring and that DI offspring can have access to information about their biological

father (see Record-Keeping). An Australian bioethics committee has devoted two major reports to these issues of record-keeping and access to information.²⁶⁷ Although sympathetic to the offspring's right to know, their final report recommends that "[T]he social parents have the choice of whether or not they inform an offspring conceived of gamete donation,"²⁶⁸ clearly respecting the parents' right to privacy.

For the minority of DI parents who decide to tell their children about their origins, there is little guidance as to when and how to do this. If adoption is a reasonable precedent, children are best told at the age at which they are told about reproduction (ages three to five). Although they will not integrate the implications of this knowledge until much later, it is generally agreed that growing up with the information is better than being told later. The following is a description of one mother's story to her DI daughter:

Your dad and I really wanted to have a baby. We had a hard time because when your dad was a teenager he had an operation which meant that he no longer had any seeds. So we went to the doctor and the doctor said he knew a man who had lots of seeds and ... gave the seeds to the doctor and the doctor put them into Mommy and that's how we got you.²⁶⁹

Single women and lesbian couples generally tell their DI children about their origins and are having to create their own stories as they go along. Without more experience in this area, it is impossible to say how DI children will react to this experience in adulthood.

Offspring

There is only one published follow-up study of children conceived through DI. This 1968 Japanese study of 54 DI offspring reports that the physical and mental development of the children studied was superior to that of the control group.²⁷⁰ Other reports about the experience and welfare of DI offspring are all based on case studies or small samples. Research on the psychosocial issues for DI offspring is hindered by secrecy and the confidentiality of the doctor-patient relationship. Most may not know about their DI origins.

Discussion of the psychosocial factors for DI children relies largely on risk factors for adoptive families.²⁷¹ These include unresolved parental feelings about infertility and the child's sense, if his or her origins are kept secret, that "something is off." There is also the concern about severe consequences if the secret is revealed under conditions of family stress.²⁷²

How far the analogy between adoptees and offspring of DI can be carried is frequently debated. Both the similarities and the differences warrant consideration. The secrecy and anonymity and the attempt to "pass" as biological parents are clearly analogous to early adoption practices, which are now considered to have been erroneous.

In DI, the biological mother is also the social mother, so that, unlike adoption (in a two-parent family), there is one biologically tied parent and one who is not biologically tied. This creates an imbalance within the family, which is structurally more analogous to a step-parent family than to an adoptive family. This imbalance may be a source of conflict for the couple.²⁷³ Another often-cited difference between DI and adoption is that adoption is a process of finding a family for a child who has been relinquished by the biological parents, whereas DI is a process for a couple or a woman seeking a child. In addition, a child is knowingly created by one of the biological parents with no intention of rearing it. Whatever weight is attributed to the differences and similarities, however, adoption remains the closest social precedent for DI practice.

Although it is generally agreed that secrecy may be harmful,²⁷⁴ there is, as noted above, no solid research to evaluate the effects of telling or not telling DI children about their origins. The difference between finding out accidentally and being told about their origins intentionally appears to be crucial to the response of DI offspring to knowledge about their origins. Two British researchers describe as positive the response of a "small number of individuals" whose parents decided to tell them of their DI origins:

When they were eventually told, all these young adults had accepted their AID status equably and none of them had found it a particularly traumatic experience ... These young people had certainly been surprised when they were told, but some of that surprise was because their parents had felt the need to keep the matter such a close secret for so many years. None of them regretted the fact that their parents had had them by AID. They were enjoying life and happy to be alive and realized that they owed their existence to AID. They were also pleased to feel that their parents had wanted a child so badly.²⁷⁵

Reports by DI children (also small samples) who found out about their origins accidentally are not so positive — although, in most cases, their anger was directed more at being deceived than at the DI procedure itself.²⁷⁶ The following is an excerpt from an interview with a 45-year-old architect and father of two children, who describes his feelings after being told by his mother about his DI origins at age 37, after his father's death:

As I grew to live with this truth, it felt like a Gordian Knot that continued to increase in complexity the more I thought about it as an issue and felt it as a personal tragedy (as I now regard it). I began to consider myself as a victim of a life-long deception. I cannot understand why it ever had to be a secret, why my mother could not have told me at the age of five, why the "donor" has to be anonymous, why there are no regulations, why this is supposedly better than adoption, and why I have no rights as a human being to know my own father.²⁷⁷

Although a distinct issue, the donor's anonymity is inextricably linked to the secrecy surrounding DI and the importance of linked records. If DI children are told about their origins, the risk is that they will want

information about their biological father. Some DI mothers in an exploratory study were unwilling to tell their children about their DI status because they knew that they could not tell them anything about their biological father and presumed they would be interested.²⁷⁸ In the words of one DI mother (of Amy) who also has an adopted child (Brian):

I think of Amy as Dan's child, our child ... It's different with Brian, everyone knows he's adopted. Secrecy isn't possible. We can help him find his parents if he wants to. It's different with AID ... we couldn't tell her about her parents.²⁷⁹

Anonymity is generally viewed in absolute terms — nothing about the donor is revealed to anyone. But his identity is known to those who recruit him, and information about him may vary from nothing at all, to medical or non-identifying information, to identifying information. This perspective opens up more possibilities for different kinds of relationships between the donor and his biological offspring and the recipients.

It is currently felt that children need to know, for mental health reasons, who their biological parents are, and that they have a right to this information. In 1964, Sants published his classic article on "genealogical bewilderment," arguing that "[n]ot knowing would appear to be incompatible with the secure self-image."²⁸⁰ "Genealogical bewilderment" is a term coined in 1952 to describe the maladjustment problems of some adopted children.²⁸¹ In 1973, Triseliotis published his study of 73 Scottish adoptees who had applied for copies of their original birth certificates.²⁸² He discovered that three out of five of this group had been told about their adoptive status late — after the age of ten. All of the adoptees who had been told late were resentful and felt betrayed by their adoptive parents. In addition, he found that those who had no information or negative information or were dissatisfied with their adoptive family were the most strongly motivated to establish a relationship with their "natural" parents. Those who were given some information or whose adoptive family experience was positive were seeking background information to complete their identity. Similarly, a more recent review suggests that a compulsion to search for biological parents is rooted in emotional deprivation but acknowledges that "genetic curiosity" is healthy among those cut off from their roots.²⁸³ The extent to which DI offspring will duplicate the responses of adoptees is unknown. However, the following is the response of one DI offspring whose father told her about her origins after her mother died:

I feel that I was cruelly deceived. By lying to me all my life, my dignity as their child and their integrity as my parents was irreparably damaged. Because I was a child my trust in them was exploited and used to cover up what they themselves considered "unpalatable" and of questionable morality.²⁸⁴

Those who find out accidentally about their DI status have several issues to deal with at once. Usually, there is a family crisis (such as a death, divorce, or serious illness perceived as genetically transmitted) which

triggers the revelation. During this stressful period, they must deal with what they are likely to see as a "life-long" deception. And, finally, they are also being asked, at this time, to deal with the implications of their DI origins — that their father is not their biological father and that there is another unknown male who has fathered them biologically. Perhaps it is because there is so much to absorb at once that DI offspring who find out accidentally about their origins do not appear to fare well. Their parents' attitude may shape how the children respond to their origins. If the parents are secretive, the child may feel ashamed, whereas openness about the procedure may create a more positive attitude.

The possibility of studying DI offspring on a large scale may be precluded by the conditions of current practice. Few may know of their origins and those who do may be difficult to contact. Further research on the responses of adoptees, however, would be useful. How many are interested in their biological parents? Are these reunions successful? Given the recent development of adoption registry programs in Canada, research in this area could shed more light on this issue in a Canadian context.

Physicians

Although the attitudes of practitioners would provide a crucial perspective on the practice of DI, this is a largely untapped research area. Surveys have tended to focus on aspects of physicians' practice other than attitudes. Only one Canadian survey turns direct attention to the attitudes of physicians themselves (discussed under the issue of access for recipients).²⁸⁵ One U.S. study, a survey undertaken by the OTA in 1987, asks specific questions about physicians' attitudes to their practice of artificial insemination.²⁸⁶ Overall, there is a good deal of variance in responses. Physicians are "split almost evenly over whether requests for artificial insemination ought to be honored 'regardless of marital status or sexual orientation'."²⁸⁷ Similarly, a small Ontario study found that about one-half of the physicians reported "impending divorce action" and "sexual orientation of the women and single status" as the most important factors in rejecting patients.²⁸⁸

Asked whether SI was a reasonable alternative to physician-assisted DI, physicians in the U.S. sample were also divided in opinion. Female physicians and physicians with smaller practices were more likely to say yes.

However, regardless of age, sex, or size of practice, surveyed physicians were "uniformly and strongly opposed" to the rights of the offspring to "communicate with their genetic fathers." Physicians showed the greatest diversity in attitudes in regard to "trait specialization" (sperm banks that specialize in donors with intellectual, artistic, or athletic gifts). Over half, in total, of the two samples agreed strongly or somewhat agreed that there was nothing wrong with these banks.²⁸⁹

In contrast to the U.S. survey, which found consensus among physicians on the point that DI offspring did not have a right to know their genetic fathers, a New Zealand survey reported that nearly half (45%) of physicians felt that children should be told of their origins, although 95% felt that there should be no Health Department requirements on this point.²⁹⁰ This substantial difference of opinion of physicians from two different countries vis-à-vis the same issue suggests the extent to which this issue is subject to cultural conditions and to the immediate context of the practice. Education, therefore, could be an effective agent of change on these issues.

Medical Risks

The risks posed by the simplest form of insemination are identical to those posed by sexual intercourse — the transmission of infection (viral, mycoplasmal, and bacterial) through semen and the risk of genetic or chromosomal abnormalities.²⁹¹ The risks are multiplied, however, by the repeated use of one donor who has not been properly screened. These risks may, in fact, be reduced if sperm donors are screened for infection and by genetic history. The repeated use of one donor in a small geographical area may increase the risk of marriage and unknowing incest among children of the same sperm donor. This has resulted in recommendations that donors be limited to between six and ten pregnancies²⁹² (see section entitled "Donors").

Some diseases which may be transmitted by DI are chlamydial infection, gonorrhoea, cytomegalovirus infection, hepatitis B, and HIV infection (see Screening). The transmission of all of these has been documented in an anecdotal fashion,²⁹³ but since there are no long-term, systematic studies of the outcomes of DI, the incidence is unknown. The anonymity and secrecy considered essential to the practice and the consequent inadequate record-keeping hinder follow-up. If HIV is transmitted, it is life-threatening. Risks from other pathogens include spontaneous abortion, placental infections, premature delivery, and stillbirth.²⁹⁴

The risks of DI increase with the number of therapies and treatments that accompany it. The more invasive methods of insemination are also more likely to increase risks. Intrauterine insemination, for example, includes risks of bleeding, cramping, introduction of infection, and uterine contamination.²⁹⁵ One source lists the possibility of developing anti-sperm antibodies in a fertile woman using intrauterine insemination for AIH.²⁹⁶ As well, diagnostic procedures may engender more risks. Listed among the risks for hysterosalpingography, for example, are "excruciating pain," radiation damage, adhesions, and pelvic inflammatory disease.²⁹⁷

The drug treatments used to induce ovulation also increase the risks of the procedure. Listed among the possible medical risks of these hormonal treatments are luteal phase defect, hydatidiform mole, ovarian hypertrophy, premature aging of the ovary, ovarian cancer, ectopic pregnancy, and multiple gestation.²⁹⁸ A fertile woman, in other words, whose ovaries are hyperstimulated during DI to increase the efficiency of the procedure, risks (1) multiple pregnancy (the risks of which include placental problems, premature rupture of the membranes, abnormal fetal presentation, the need for selective fetal reduction, induced hypertension, excess amniotic fluid, the need for post-partum blood transfusions, severe nausea, vomiting, anxiety, depression, prematurity, low birthweight, and an increase in birth defects,²⁹⁹ as well as the innumerable social and economic costs of bearing and raising more than one child at a time); (2) severe ovarian hyperstimulation (swelling of ovaries, fever, severe abdominal pain) occurring in about 10% of cases;³⁰⁰ and (3) an increase in ectopic pregnancy (5% in one study).³⁰¹ Once again, these are iatrogenic problems caused by the DI procedure, in some cases in women with no proven fertility problems. No studies have been conducted on the offspring looking at the reproductive tract at or beyond puberty, so that the effects of the drug therapies over time is unknown.

There is no evidence of an increased risk to DI offspring, with the exception of the psychosocial issues identified in the section above. The risks to the donor include the risk of finding out about infection (including HIV), about genetic abnormalities, and about problems with his own fertility.

Sperm Banks

An exploratory study of sperm-banking practice in Canada was undertaken for the purpose of this report, since there does not appear to be literature in this area. A number of banks were contacted: three Canadian commercial sperm banks (Repromed and Gamete Services in Toronto and L'Institut de la Médecine de la Reproduction de Montréal), seven hospital-based banks, five smaller clinics that use banks, and two U.S. commercial banks (Idant in New York City and Xytex in Augusta, Georgia). A number of questions concerning donor recruitment, payment, screening practices, the frequency of donation, counselling, and costs to the patient were asked. The following is a brief summary of the results of this small study.

Donors are recruited mainly from two groups: (1) students (university-wide and medical students) and (2) donors found through the physician's practice and personal contacts. The latter group consists largely of the husbands and partners of female patients with fertility problems. One U.S. bank reported recruiting "mostly young professionals" through TV ads and

general newspapers. Most banks reported recruitment problems for donors in specific populations (e.g., Chinese, East Indian, Black, Arab, etc.), although they also reported that the demand for sperm among these groups is low. Donors are paid, on average, \$50 per sample, with one Canadian commercial bank paying \$90 per sample.

All of the banks surveyed used either CFAS, AFS, or American Association of Tissue Banks guidelines for screening donors. Adherence to the guidelines resulted in the rejection of between 75% to 95% of prospective donors. Most banks limit the number of donations per donor in some way, although, in some cases, this is in terms of years of donation, not live births. (The average number of pregnancies per donor is 10, with a range from 3 to 30.) One hospital-based bank in a small community reported no limit on the number of donations, pregnancies, or births per donor.

Donors are counselled on reporting changes in their sexual behaviour, but most banks (with the exception of the large commercial U.S. banks) do not counsel on psychosocial issues. The charge (to the patient or to the physician from the bank) is, on average, about \$100 per sample. Sperm samples from ethnic populations cost a little more, as does washed sperm or sperm that has been shipped from the United States. There was no shortage of sperm reported. Although every sperm bank and clinic contacted is using frozen sperm, several practitioners mentioned that they are aware that smaller, office-based practices were still using fresh sperm.

Research Needs

The following is a preliminary agenda for research in DI, which is derived directly from the literature review above. It is not meant as a comprehensive list but as a guide to identifying issues on which data are needed, which, in DI, includes almost every area of the practice and its consequences. Many of the issues are linked, such as record-keeping practices and, for example, monitoring of outcomes. Almost all would require the cooperation of practitioners.

With the exception of the Freedman et al. study of non-medical selection criteria,³⁰² there has been no systematic collection of data from Canadian DI practitioners. In order to get a full picture of DI practice in Canada, it is important to collect data from both hospital-based and office-based practices, since anecdotal evidence indicates that these might be quite different. A list of issues and/or information on which it would be extremely useful to have data on DI practice in Canada follows.

Practice and Attitudes of Physicians

DI Practice

- a comprehensive list of practitioners using DI;³⁰³
- incidence (the number of live births). This requires follow-up procedures and record-keeping practices that are not currently in place;
- outcomes: the number of inseminations, pregnancies, live births, and abnormalities;
- awareness of professional guidelines — current CFAS, AFS, Ontario, or other guidelines;
- adherence to professional guidelines for screening donors;
- collection of data on transmission of diseases to recipients (this also requires follow-up procedures and record-keeping practices that are currently not in place);
- extent of simple or complex methods of insemination being used and under what conditions;
- record-keeping practices (Are records kept on the donor, on the use of his sperm, and on pregnancies, live births, and other relevant outcomes? Is the opportunity available for the donor to update his file if, for example, he were to develop a problem in the future, such as diabetes, or simply change his personal information? Are records kept on the recipient? Is it possible to make links between the recipient, the donor, and each offspring?);
- donor recruitment: How are donors recruited?;
- payment to donors: Are donors paid? How much? Is it viewed as payment or as reimbursement for time and expenses?;
- limitations on the number of donations per donor;
- criteria for screening recipients;
- counselling for donors;
- costs to the consumer;
- counselling recipients about risks and options;
- sources of sperm: commercial or public banks;
- use of fresh or frozen sperm;
- sex preselection practice.

Sperm Banks

- awareness of professional guidelines;
- adherence to professional guidelines;

- record-keeping practices;
- donor recruitment;
- payment to donors;
- limitations on the number of donations;
- the number of straws from each ejaculate;
- the extent of profit for commercial banks;
- counselling for donors;
- costs.

Attitudes of Practitioners

- attitudes regarding non-medical selection of recipients, e.g., single women, lesbian couples;³⁰⁴
- centralized registries;
- who should have access to records and under what conditions?;
- rights of offspring;
- rights of donors;
- rights of recipients.

Attitudes of the Public and of Participants

Community Attitudes

- There has been no poll of the Canadian public on the issues involved in DI (e.g., payment for gamete donation, opinion on offspring rights, etc.).

Donors

- attitudes toward donation/payment/offspring/recipients;
- attitudes toward anonymity and disclosure issues (non-identifying and/or identifying information);
- attitudes toward record-keeping;
- attitudes of a non-donor male population³⁰⁵ vis-à-vis these issues.

Recipients

- the experience of single women and lesbian couples creating families through DI and SI;
- decision-making process leading to DI for all participants;
- indicators of the success of the procedure in social terms (i.e., the experience of the families, their attitudes toward the procedure in the long term, marital stress caused by DI);

- reasons for secrecy and the extent of secrecy;
- the effects of telling or not telling offspring.

Offspring

- It would be ideal to have long-term, large-scale studies of DI offspring; however, this is unlikely because of the secrecy and anonymity surrounding the procedure. Such studies would be possible with children conceived through SI, since secrecy is less an issue. However, the issues would be different from those experienced by children conceived through DI in a medical setting;
- It should be possible to collect some information on the experience of offspring even if the sample is small;
- Another useful source of information is adoption registries. How much are they being used? What are their problems or successes? Is this a feasible model for DI offspring?

DI is an important reproductive alternative not matched by an active research interest in either the medical or psychosocial aspects of the procedure. IVF, with only a little over a decade of practice, has far more available research than DI, which has now been practised for several decades in Canada. Although DI practice has benefited from research in other areas, focussing research on issues unique to DI would assist in ensuring safe practice. It would also be helpful in evaluating its appropriate place in our society.

Conclusions

Despite the technical advances in screening of donors, freezing of sperm, and new methods of insemination, DI is practised today in medical settings in much the same manner as it was a century ago. Physicians maintain control over the whole process; the selection, as well as the matching, of donors and recipients is controlled by practitioners; sperm donors remain anonymous; record-keeping is haphazard; participants have no right of access to records if they are kept; DI offspring and other family members are rarely told of the DI conception; and the entire process is kept secret. Within this medical model, a fertile woman becomes a patient and may risk the side-effects of drugs and therapies used to increase the efficiency of the procedure. An attempt is made to deny the psychological impact of male infertility and the consequent loss of a child biologically tied to both parents. Offspring are raised without knowledge of their DI origins and would, in most cases, be unable to obtain information about their biological father even if they were told. Although the risk of transmitting HIV through semen may ensure a medical role in DI practice, it was not the

original reason for medicalization, nor is it a reason to maintain medical control over the entire process.

There are demands among consumers for a different kind of DI practice. In the United States, there are two groups of DI offspring lobbying for access to records about their biological fathers: Donors' Offspring and HOPE (Helping Offspring Pursue Ethics). In Canada, there is a group called the New Reproductive Alternatives Society, whose goals are public education, support for participants, and lobbying for changes in DI practice on issues such as access to records, control over the procedure, and recognition of the psychological processes involved.

In a different model of DI practised by the Sperm Bank of California (see Appendix 1), recipients choose a donor from a catalogue that lists race/ethnicity, skin, hair, and eye colour, height, weight, blood type, and identity-release information.³⁰⁶ Donor profiles summarizing family history and medical, physical, and personal characteristics, as well as the donor's medical chart (containing a detailed medical history form, lab test results, and exam findings), are also available. It is also possible for participants to bring their own donor to the bank. Participants have the option of directly enrolling in the bank, where the program includes an orientation, fertility awareness class, complete physical examination, assistance with selecting the donor and the insemination visit, or working directly with their own physician, who must register with the bank. The insemination can take place in the clinic, in the doctor's office, or at home. Partners are encouraged to participate in every phase of the program and catalogues, profiles, and sperm can be mailed to any destination in the United States or Canada.

In this model, a high level of screening and technical expertise is maintained, but participants can negotiate different aspects of the process with the sperm bank or with their physician. Participants are more likely to tell their children about their DI origins. Some offspring will be able to meet their biological father at age 18. The innovative family forms created through DI are more visible than in traditional medical practice, where every attempt is made to pretend that the DI did not take place.

In the traditional medical practice of DI, the birth of a child is the end goal of the process. In the life of all participants, the birth of a DI child is also a beginning. It is the beginning of a new and innovative family form that can only benefit from acknowledgement of its unique features.

Appendix 1. The Sperm Bank of California

WHAT IS DONOR INSEMINATION?

Donor insemination is a process of introducing semen into the vaginal canal or cervix with a device for the purpose of fertilizing an egg and achieving pregnancy.

Its safety and effectiveness have been well established. Currently in the U.S. 15-20,000 children a year are conceived by insemination. Since WW II well over 300,000 children have been born as a result of this method and since 1776, when the technique of freezing sperm was developed, over a million children have been conceived through this method.

ABOUT THE PROGRAM

There are six components to our donor insemination program. All office visits are by appointment only.

1. **Orientation** - An introductory discussion about our services, philosophy, client participation, donor screening criteria and legal information.
2. **Fertility Awareness Class** - Designed to show participants how to check, chart and interpret the fertility cycle. Includes instruction on how to chart basal body temperature, check cervical mucus, and do self-exam of the cervix with a plastic speculum.
3. **Complete Physical Exam** - Includes laboratory testing and family history.
4. **Consultation** - For selection of a donor. Medical compatibility is reviewed.
5. **Insemination Visit** - At the fertile time the woman comes in the office. She can receive a mucus check and assistance with insemination. Assistance is provided to women who
 - inseminate at the office
 - inseminate at home
 - have their own donor
6. **Pregnancy Test** - A urine test is offered six weeks from the last normal menstrual period.

Cost: fees for all services are based on a sliding scale. Call for specific fees.

Confidentiality: all medical records of donors and recipients are confidential.

Referrals: referrals can be made to counsellors and specialists pertinent to infertility, pregnancy achieving and prenatal care.

PHILOSOPHY

We believe that women have the right to control our own reproduction and in doing so, determine if, when and how to achieve pregnancy. The donor insemination program at our center is for all women, regardless of race, marital status or sexual orientation. Lesbians, single women and women with infertile partners are encouraged to participate.

For many years semen for artificial insemination by donor (A.I.D.) has been available on a limited basis. Our program is an important resource for women who have not had access to alternative fertilization.

THE SPERM BANK OF CALIFORNIA

The Sperm Bank has attracted clients from all over the world. The donor insemination program at The Sperm Bank is unique. Among its features are:

- High quality medical screening and fertility testing on all donors
- Large inventory of donor specimens
- Physical, health as well as personal characteristics of all donors
- Accessibility to donor information
- Availability of identity-release donors
- Diverse ethnic representation of donors
- Expert advisory board for medical and legal consultation

If you are interested in the Donor Insemination Program at The Sperm Bank, please call. As with all of our services, your confidentiality is strictly observed.

THE SPERM BANK OF CALIFORNIA

Telegraph Hill Medical Plaza
3007 Telegraph Ave.
Suite 2
Oakland, CA 94609
(510) 444-2014

OTHER SERVICES

Private donor screening
Sperm storage
Semen analysis
Sperm washing
AIDS screening
Fertility awareness classes
Health education
Advocacy and referrals

Appendix 2. Sample Questionnaires from CFAS Guidelines

MEDICAL QUESTIONNAIRE

HISTORY:

Potential donor no.:

Place & date of birth: _____/____/19____ Age: _____

Marital status: single/married/separated _____

Fertility status: proven/unknown _____

Ethnic origin: father: _____ mother: _____

Education status: _____

Occupation: _____

Reproductive toxicology hazard: NO/YES: _____

Blood transfusion: NO/YES: place _____ date _____

I/V drug use: NO/YES: _____

Sexual proclivity: heterosexual/bisexual/homosexual (*ever, not just now*)

MEDICAL

Allergies: NO/YES: _____

Regular medication: NO/YES: _____

History of STD: NO/YES: _____

Surgery: NO/YES: _____

Asthma: NO/YES: _____

Respiratory: NO/YES: _____

Cardiac problems: NO/YES: _____

Renal problems: NO/YES: _____

Diabetes: NO/YES: _____

Jaundice: NO/YES: _____

Mumps: NO/YES: _____

Hypertension: NO/YES: _____
 Epilepsy: NO/YES: _____
 Mental illness: NO/YES: _____
 Vision problems: NO/YES: _____
 Hearing problems: NO/YES: _____

Completed by: _____ Date: ____/____/19__

MATCHING CHARACTERISTICS

Race: CAUCASIAN/ MEDITERRANEAN/ INDIAN/ CHINESE/ JAPANESE/
 NATIVE INDIAN/ POLYNESIAN/ NEGRO/ _____

Blood group: ABO type: O/A/B/AB Rh type: NEGATIVE/POSITIVE

Height: _____ feet _____ inches OR _____ centimetres

Weight: _____ pounds OR _____ kilograms

Build: SLIGHT/ MEDIUM/ HEAVY/ OBESE

Hair color: FAIR/ LIGHT-BROWN/ DARK-BROWN/ BLACK/ RED/

Beard color: FAIR/ LIGHT-BROWN/ DARK-BROWN/ BLACK/ RED/

Eye color: BLUE/ BROWN/ GREEN/ GRAY/ HAZEL/ _____

COMMENTS: _____

Completed by: _____ Date: ____/____/19__

GENETICS QUESTIONNAIRE

1. Have you ever had any chronic illness, disorder or health problem?	YES	NO
2. Have you ever been treated for a mental illness?	YES	NO
3. Do (or did) you have any birth defects(s)?	YES	NO
4. Have you ever sired a pregnancy that was lost as a miscarriage, stillbirth or childhood death?	YES	NO
5. Do you have any children with a birth defect, mental retardation or handicapping condition?	YES	NO
6. Think of your brothers and sisters and their children. Are there any among them with:		
A birth defect	YES	NO
Mental retardation ("slow")	YES	NO
Chronic illness	YES	NO
Genetic conditions or illness	YES	NO
Stillbirth(s)	YES	NO
7. Think of your parents, aunts, uncles and cousins. Are there any among them with:		
A birth defect	YES	NO
Mental retardation ("slow")	YES	NO
Chronic illness	YES	NO
Genetic conditions or illness	YES	NO

8. If you have answered "YES" to any of the above questions, please give the details here:

9. Do you belong to one of the following ethnic backgrounds?

<input type="radio"/> - Negro (sickle cell)	<input type="radio"/> - Jewish (Tay-Sach's)
<input type="radio"/> - Chinese (x-thalassemia)	<input type="radio"/> - S.E. Asia (x- & β -thalassemia)
<input type="radio"/> - Greek (β -thalassemia)	<input type="radio"/> - Maltese (β -thalassemia)
<input type="radio"/> - Italian (β -thalassemia)	<input type="radio"/> - Portuguese (β -thalassemia)
<input type="radio"/> - E. Indian (β -thalassemia)	<input type="radio"/> - Other: _____

Completed by: _____

Date: ____/____/19____

SPECIFIC GENETIC SCREEN

1. Does any member of your family have any of the following conditions?

a) Down's syndrome	YES	NO
b) cleft lip or cleft palate	YES	NO
c) club foot	YES	NO
d) congenital heart disease	YES	NO
e) mental retardation	YES	NO
f) neural tube defects (spina bifida, meningocele)	YES	NO
g) cystic fibrosis	YES	NO
h) phenylketonuria or other inherited metabolic disorder	YES	NO
i) progressive kidney disease	YES	NO
j) diabetes mellitus requiring insulin therapy	YES	NO
k) diabetes mellitus not requiring insulin	YES	NO
l) premature degeneration of any organ system	YES	NO
m) cataracts before the age of 40	YES	NO
n) deafness before the age of 60	YES	NO
o) loss of muscle coordination	YES	NO
p) schizophrenia	YES	NO
q) manic depressive psychosis	YES	NO
r) mental deterioration or senility before the age of 50	YES	NO

2. Do you have any coffee-colored spots on your skin (about the size of a quarter)? YES NO

3. Is there a history of early deaths in your family (heart attacks, etc)? YES NO

Completed by: _____

Date: ____/____/19____

MATERNAL ANCESTRY

Grandfather:

(if living) Age: _____ Health status _____
 (if deceased) Age at death: ____ Cause of death _____

Grandmother:

(if living) Age: _____ Health status _____
 (if deceased) Age at death: ____ Cause of death _____

Aunts and uncles:

Living:	Sex	Age	Health status
1. _____	M/F	___	_____
2. _____	M/F	___	_____
3. _____	M/F	___	_____
4. _____	M/F	___	_____
5. _____	M/F	___	_____

Deceased: (include neonatal and childhood deaths)

	Sex	Age at death	Cause of death
1. _____	M/F	___	_____
2. _____	M/F	___	_____
3. _____	M/F	___	_____
4. _____	M/F	___	_____

First cousins:

Neonatal death(s)?: NO/YES: ___ Cause (if known): _____
Birth defect(s)?: NO/YES: ___ Specify: _____

Mother:

(if living) Age: _____ Health status _____
(if deceased) Age at death: ___ Cause of death _____

Mother's ancestors:

Country: _____ Region: _____ City: _____

THREE GENERATION HISTORY

SIBLINGS

Living:	Sex	Age	Health status
1. _____	M/F	___	_____
2. _____	M/F	___	_____

3. _____ M/F _____
 4. _____ M/F _____
 5. _____ M/F _____

Deceased: (include neonatal and childhood deaths)

- | Age at death | Cause of death |
|--------------|----------------|
| 1. _____ | _____ |
| 2. _____ | _____ |
| 3. _____ | _____ |
| 4. _____ | _____ |

CHILDREN (your own, if any)

- | Living: | Sex | Age | Health status |
|----------|-----|-------|---------------|
| 1. _____ | M/F | _____ | _____ |
| 2. _____ | M/F | _____ | _____ |
| 3. _____ | M/F | _____ | _____ |
| 4. _____ | M/F | _____ | _____ |
| 5. _____ | M/F | _____ | _____ |
| 6. _____ | M/F | _____ | _____ |

Deceased: (include neonatal and childhood deaths)

- | Age at death | Cause of death |
|--------------|----------------|
| 1. _____ | _____ |
| 2. _____ | _____ |

PATERNAL ANCESTRY

Grandfather:

- | | | |
|---------------|---------------------|----------------------|
| (if living) | Age: _____ | Health status _____ |
| (if deceased) | Age at death: _____ | Cause of death _____ |

Grandmother:

- | | | |
|---------------|---------------------|----------------------|
| (if living) | Age: _____ | Health status _____ |
| (if deceased) | Age at death: _____ | Cause of death _____ |

Aunts and uncles:

Living:	Sex	Age	Health status
1. _____	M/F	—	_____
2. _____	M/F	—	_____
3. _____	M/F	—	_____
4. _____	M/F	—	_____
5. _____	M/F	—	_____

Deceased: (include neonatal and childhood deaths)

	Sex	Age at death	Cause of death
1. _____	M/F	—	_____
2. _____	M/F	—	_____
3. _____	M/F	—	_____
4. _____	M/F	—	_____

First cousins:

Neonatal death(s)? NO/YES: — Cause (if known): _____
 Birth defect(s)? NO/YES: — Specify: _____

Father:

(if living) Age: _____ Health status _____
 (if deceased) Age at death: _____ Cause of death _____

Father's ancestors:

Country: _____ Region: _____ City: _____

Glossary

Anti-sperm antibodies: Antibodies to sperm found in either member of an infertile couple, which may interfere with sperm movement or ability to interact with the egg.

Arginine: Amino acid used to stimulate sperm activity.

Cervical factor infertility: Infertility associated with cervical mucus incompatibilities with a partner's sperm.

Chlamydia: The bacterium *Chlamydia trachomatis* is a common cause of sexually transmitted disease. In women, infection may cause pelvic inflammatory disease (PID) of the upper genital tract, leading to infertility, increased risk of ectopic pregnancy, stillbirth, or premature birth, and eye infection and pneumonia in a resulting infant. In men, chlamydia may cause inflammation of the urethra, which, if untreated, can reach the epididymis. It is difficult to cure and may cause infertility.

Cryopreservation: The preservation of tissues such as sperm, eggs, or embryos by freezing them at extremely low temperatures in liquid nitrogen.

Cytomegalovirus: One of a group of highly host-specific herpes viruses. Depending upon the age and immune status of the host, the virus can cause a variety of clinical syndromes.

Ectopic pregnancy: A fertilized egg that implants outside the uterus, usually in the fallopian tube.

Endometriosis: The presence of endometrial tissue (the normal uterine lining) in abnormal locations, such as the fallopian tubes, ovaries, or peritoneal cavity.

Erectile dysfunction: Failure of the erectile tissues in the penis or clitoris.

Fecundability: The probability of pregnancy occurring per cycle of treatment; the figure may be multiplied by 100 to give a "percentage chance" of pregnancy.

Fertilization: Fusion of an oocyte (egg) and sperm and subsequent combining of the two sets of chromosomes (23 each).

Follicle: A fluid-filled structure within the ovary that contains the developing egg. At ovulation, the follicle breaks through the surface of the ovary and the egg is released.

Gamete: The mature male or female reproductive cell, which contains one set of chromosomes. In a man, the gametes are sperm; in a woman, they are eggs, or ova.

Gamete intrafallopian transfer (GIFT): A technique of assisted reproduction in which fertilization takes place *in vivo*. A woman's mature oocytes are removed by laparoscopy or under ultrasound guidance and then reintroduced with sperm in a catheter threaded into the fallopian tubes.

Gonorrhoea: A sexually transmitted bacterial disease. If not treated, in women, it can spread to the uterus and the fallopian tubes, causing pelvic inflammatory disease; in men, it can cause inflammation of the testes and can affect semen quality.

Herpes: An infection caused by the herpes simplex virus transmitted by vaginal, anal, or oral sex and sometimes through linens and towels. Men may have sores on the penis, scrotum, perineum, buttock, anus, and thigh, and women, on the vagina and cervix. The outbreaks recur and there is currently no medical cure.

Hydatidiform mole: An abnormal pregnancy resulting from a pathologic ovum. It results in a mass of cysts resembling a bunch of grapes.

Hypertrophy: The enlargement or overgrowth of an organ owing to an increase in size of its constituent cells.

Hypospadias: A structural abnormality of the penis where the opening of the urethra is on the underside of the penis. It may decrease fertility by preventing semen from being delivered into the vagina, but does not affect the quality of the sperm.

Hysterosalpingogram (HSG): An X-ray of the female reproductive tract after injecting into the uterus a dye that travels into the fallopian tubes. Since the dye does not transmit X-rays, the outline of the uterus and the degree of openness of the fallopian tubes can be seen.

Idiopathic infertility: Infertility for which no organic problem has been identified in either partner.

Insemination cycles: A menstrual cycle in which a woman is inseminated.

Intrafallopian: Within the fallopian tubes.

Intraperitoneal: Within the peritoneal cavity.

Intrauterine: Within the uterus.

In vitro fertilization (IVF): A technique of assisted reproduction. Mature oocytes (eggs) are removed from a woman's ovary, usually after administration of an ovulatory stimulant, and fertilized with sperm in the laboratory. If the sperm do not fuse with the ova, fertilization may be achieved by micro-injection of sperm into the egg or by mechanically opening the zona pellucida. After fertilization and incubation, the fertilized egg is placed in the woman's uterus. An embryo from IVF may also be transferred to another woman.

Kinins: Peptides used to stimulate sperm activity.

Laparoscopy: A procedure requiring a general anaesthetic, in which the reproductive organs are viewed through a special scope (laparoscope) inserted near the navel after the abdomen has been inflated with carbon dioxide. It is used in the investigation of adhesions, endometriosis, and pelvic inflammatory disease.

Luteal phase defect (LPD): Failure of the endometrial lining of the uterus to develop properly after ovulation because of inadequate production of progesterone by the corpus luteum (cells left in the follicle after the egg leaves). This may prevent a fertilized egg from implanting in the uterus or may lead to early pregnancy loss.

Luteinizing hormone (LH): The pituitary hormone that causes the testes in men and ovaries in women to make sex hormones. In women, when the egg is ripe, the pituitary releases a large amount of LH. As a result, within 24 to 36 hours the egg finishes maturing and bursts out of the ovary. The remaining cells in the follicle start producing the sex hormone progesterone. In men, the two pituitary hormones, LH and FSH (follicle-stimulating hormone), are released together. LH stimulates testosterone production in the testes.

Microbial screening: Laboratory screening for bacteria, protozoa, and fungi.

Morphology: The study of form and structure, such as assessing the shape of sperm during semen analysis. Dysmorphology of sperm may affect movement and, thus, the ability of the sperm to fertilize the egg.

Mycoplasma: A micro-organism similar to bacteria which is associated with reproductive tract infections. This is the basis of a sexually transmitted disease, which may be transmitted alone or with chlamydia. Women are often asymptomatic, but men often have painful urination and discharge. This organism has been implicated in some studies in female infertility, ectopic pregnancy, miscarriage, and premature birth.

Non-motile: Referring to the inability of sperm to move spontaneously.

Orchitis: Inflammation of the testes.

Ovulation: The release of an oocyte (egg) from a woman's ovary, generally around the midpoint of the menstrual cycle.

Pathogen: Any disease-producing micro-organism.

Retrograde ejaculation: Flow of semen into the bladder rather than out through the penis.

Streptococcal infection: Acute or chronic streptococcal infections of the genital tract. They are not usually sexually transmitted. They sometimes travel through the lymphatic or blood vessels, causing adhesions to form around the outside of the

fallopian tubes, thereby affecting fertility. The source can be an induced abortion, miscarriage, childbirth, or biopsy.

Syphilis: A bacterial disease caused by a spiral-shaped bacterium called a spirochete. In infection stages, it is transmitted through sexual intercourse or skin contact and may affect fertility.

Trichomoniasis: An infection of the vagina caused by the parasitic organism *Trichomonas vaginalis*, which may be sexually transmitted.

Tubal polyp: A growth on the mucous membrane of the fallopian tube.

Ureaplasma: See *Mycoplasma*.

Uterotubal junction: The junction of the uterus and the passage through which ova leave the uterus.

Vaginismus: Involuntary contraction of the muscles around the outer third of the vagina, which prohibit penile entry.

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Notes

1. P. Singer and D. Wells, *The Reproduction Revolution* (Oxford: Oxford University Press, 1984).
2. Anonymous, personal communication with DI practitioner, October 1985.
3. The legal issues will not be dealt with in this paper.
4. Sex selection techniques are not yet very well developed and remain controversial scientifically as well as socially. See M.R. Geier, J.L. Young, and D. Kessler, "Too Much or Too Little Science in Sex Selection Techniques?" *Fertility and Sterility* 53 (1990): 1111-12.
5. With AIH, there is a tendency to use more complex methods of insemination since the sperm itself will need to be prepared and manipulated, or intrauterine insemination may be indicated because of female factor infertility in the recipient. However, owing to the current requirement of freezing donor sperm, the technical differences between the two types of insemination are reduced.
6. AIH is much less contentious socially; however, the traditional view of the Roman Catholic Church opposes even the use of AIH since procreation would be

achieved without sexual intercourse. This parallels a similar view about birth control, which would also separate sexuality and procreation.

7. See, for example, the section on SI in this report. It could be argued that AIDS has changed the possibility of finding a partner to achieve pregnancy, but the medicalization of DI occurred long before the advent of AIDS.

8. Canadian Fertility and Andrology Society (CFAS) and Society of Obstetricians and Gynaecologists of Canada (SOGC), *Ethical Considerations of the New Reproductive Technologies* (Toronto: Ribosome Communications, 1990).

9. J.B. Staub and L.I. Lipshultz, "Treatments for Infertile Men," *Medical Aspects of Human Sexuality* 24 (July 1990): 40-45.

10. Inflammation of a testis as a result of the mumps.

11. Varicocele is "an abnormal dilation and twisting of the veins carrying blood from the testes back to the heart." U.S., Congress, Office of Technology Assessment (OTA), *Infertility: Medical and Social Choices* (Washington, DC: U.S. Government Printing Office, 1988), 66.

12. Ibid.

13. See, for example, R.M. Greenblatt et al., "Screening Therapeutic Insemination Donors for Sexually Transmitted Diseases: Overview and Recommendations," *Fertility and Sterility* 46 (1986): 351-64; M. Chauhan et al., "A Protocol for the Recruitment and Screening of Semen Donors for an Artificial Insemination by Donor Programme," *Human Reproduction* 3 (1988): 873-76; W.P. Hummel and L.M. Talbert, "Current Management of a Donor Insemination Program," *Fertility and Sterility* 51 (1989): 919-30; C.L.R. Barratt, M. Chauhan, and I.D. Cooke, "Donor Insemination — A Look to the Future," *Fertility and Sterility* 54 (1990): 375-87; B.S. Shanis, J.H. Check, and A.F. Baker, "Transmission of Sexually Transmitted Diseases by Donor Semen," *Archives of Andrology* 23 (1989): 249-57; and J.L. Marks, D. Marks, and L.I. Lipshultz, "Artificial Insemination with Donor Semen: The Necessity of Frequent Donor Screening," *Journal of Urology* 143 (1990): 308-10.

14. American Fertility Society (AFS), *Report of the Ad Hoc Committee on Artificial Insemination* (Birmingham: The Society, 1980).

15. See the analysis in K.S. Moghissi, "Reflections on the New Guidelines for the Use of Semen Donor Insemination," *Fertility and Sterility* 53 (1990): 399-400.

16. American Fertility Society (AFS), "New Guidelines for the Use of Semen Donor Insemination: 1986," *Fertility and Sterility* 46 (Suppl. 2)(1986): 95S-110S.

17. The possibility that the development of seropositivity (detection of HIV antibodies) may occur after 180 days (six months) has not been excluded. Hummel and Talbert, "Current Management."

18. American Fertility Society (AFS), "Revised New Guidelines for the Use of Semen Donor Insemination," *Fertility and Sterility* 49 (1988): 211.

19. American Fertility Society (AFS), "New Guidelines for the Use of Semen Donor Insemination: 1990," *Fertility and Sterility* 53 (Suppl. 1)(1990): 1S-13S.

20. Canada, Health and Welfare Canada, *Storage and Utilization of Human Sperm* (Ottawa: Health and Welfare Canada, 1981).

21. Ontario, Ministry of Health, *Recommended Guidelines for Therapeutic Donor Insemination Services in Ontario* (Toronto: Ministry of Health, 1987).
22. Canadian Fertility and Andrology Society (CFAS), *Guidelines for Therapeutic Donor Insemination* (Montreal: Canadian Fertility and Andrology Society, 1988).
23. CFAS and SOGC, *Ethical Considerations*.
24. Ontario, Ministry of Health, *Recommended Guidelines*.
25. Ibid.
26. CFAS and SOGC, *Ethical Considerations*.
27. Ontario, Ministry of Health, *Recommended Guidelines*.
28. CFAS, *Guidelines for Therapeutic Donor Insemination*.
29. See, for example, CFAS, *Guidelines for Therapeutic Donor Insemination*.
30. See, for example, Ontario, Ministry of Health, *Recommended Guidelines*.
31. CFAS, *Guidelines for Therapeutic Donor Insemination*.
32. A small Ontario survey of DI practitioners reports that "[T]welve of 15 physicians followed the pregnant women post-conception and 11 of 12 physicians reported following the women into the postpartum period." J. Jarrell and R. Milner, "Artificial Insemination by Donor in Ontario," *Annals/Royal College of Physicians and Surgeons of Canada* 19 (1986): 115-18. This amount of follow-up would appear to be unusual in DI practice.
33. G.J. Stewart et al., "Transmission of Human T-Cell Lymphotropic Virus Type III (HTLV-III) by Artificial Insemination by Donor," *Lancet* (14 September 1985): 581-84.
34. W.R. Berry et al., "Transmission of Hepatitis B Virus by Artificial Insemination," *JAMA* 257 (1987): 1079-81.
35. T.C. Nagel, G.E. Tagatz, and B.F. Campbell, "Transmission of *Chlamydia trachomatis* by Artificial Insemination," *Fertility and Sterility* 46 (1986): 959-60.
36. D.E. Moore et al., "Transmission of Genital Herpes by Donor Insemination," *JAMA* 261 (1989): 3441-43.
37. N.J. Flumara, "Transmission of Gonorrhoea by Artificial Insemination," *British Journal of Venereal Diseases* 48 (1972), 308.
38. B.N. Barwin, "Transmission of *Ureaplasma urealyticum* by Artificial Insemination by Donor," *Fertility and Sterility* 41 (1984): 326-27.
39. L. Mascola and M.E. Guinan, "Semen Donors as the Source of Sexually Transmitted Diseases in Artificially Inseminated Women: The Saga Unfolds," *JAMA* 257 (1987): 1093-94.
40. Anonymous, personal communication with a recipient attending a major hospital clinic in Toronto, November 1990; see also C. Gainor, "Service Supplying Fresh Sperm Abandoned After Controversy," *Medical Post* 26 (27 February 1990): 28.
41. M. Curie-Cohen, L. Luttrell, and S. Shapiro, "Current Practice of Artificial Insemination by Donor in the United States," *New England Journal of Medicine* 300 (1979), 588.

42. M.C. Timmons et al., "Genetic Screening of Donors for Artificial Insemination," *Fertility and Sterility* 35 (1981), 451.
43. U.S., Congress, Office of Technology Assessment (OTA), *Artificial Insemination: Practice in the United States: Summary of a 1987 Survey — Background Paper* (Washington, DC: Office of Technology Assessment, 1988).
44. A survey of DI clinics in the United Kingdom reports that "most of the clinics had no structured policy for control of common (non-HIV) sexually transmitted diseases within their programmes." See C.L.R. Barratt et al., "Screening Donors for Sexually Transmitted Disease in Donor Insemination Clinics in the UK: A Survey," *British Journal of Obstetrics and Gynaecology* 96 (1989): 461-66.
45. Jarrell and Milner, "Artificial Insemination."
46. This survey, undertaken in 1983-84, preceded medical knowledge about testing for HIV.
47. OTA, *Artificial Insemination*, 51.
48. CFAS and SOGC, *Ethical Considerations*, 29.
49. AFS, "New Guidelines: 1990," 2S.
50. This may include basal body temperature charting, observation of cervical mucous, measurements of luteinizing hormone, and/or ultrasound monitoring of follicular maturation. See AFS, "New Guidelines: 1990," 2S.
51. *Ibid.*
52. R.G. Achilles, "The Social Meanings of Biological Ties: A Study of Participants in Artificial Insemination by Donor" (Ph.D. dissertation, University of Toronto, 1986). See also R. Achilles and M. Lippincott, "The Dialectics of Reproduction: The Third Revolution?" *Resources for Feminist Research* 18 (September 1989), 73, for discussion of sperm as a "special commodity" — treated both as a service of sale and as a donation.
53. See, for example, E.F. Olshansky and L.N. Sammons, "Artificial Insemination: An Overview," *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 14 (Suppl.)(1985): 49S-54S; E.C. Small and R.N. Turksoy, "A View of Artificial Insemination," *Advances in Psychosomatic Medicine* 12 (1985): 105-23; and N.J. Alexander and S. Ackerman, "Therapeutic Insemination," *Obstetrics and Gynecology Clinics of North America* 14 (1987): 905-29.
54. Semen gels or coagulates immediately after ejaculation and later liquefies again.
55. Cryopreservation (freezing) of sperm may differ by laboratory but generally a cryoprotective medium such as glycerol is added to the sperm and the sample is then frozen in straws in liquid nitrogen. The 1988 CFAS guidelines for therapeutic DI provide a detailed description of semen cryopreservation.
56. P. Mazzola and J.J. Stangel, "Artificial Insemination Performed by Husband," *Fertility and Sterility* 41 (1984): 654.
57. Recent medical literature uses the term *intracervical insemination* to refer to what was previously called intravaginal insemination. See OTA, *Infertility*, 126; and W. Byrd et al., "A Prospective Randomized Study of Pregnancy Rates Following

Intrauterine and Intracervical Insemination Using Frozen Donor Sperm," *Fertility and Sterility* 53 (1990): 521-27.

58. M.P. Diamond et al., "Pregnancy Following Use of the Cervical Cup for Home Artificial Insemination Utilizing Homologous Semen," *Fertility and Sterility* 39 (1983): 480.

59. Exploratory research also indicates that DI is rarely practised in its simplest form in clinical settings. Achilles, "Social Meanings."

60. In some cases the use of intrauterine insemination remains contentious. See N.C. Allen et al., "Intrauterine Insemination: A Critical Review," *Fertility and Sterility* 44 (1985): 569-80.

61. A. Sunde, J. Kahn, and K. Molne, "Intrauterine Insemination," *Human Reproduction* 3 (1988): 97-99.

62. OTA, *Medical and Social Choices*, 127. This technique remains experimental. See CFAS and SOGC, *Ethical Considerations*, 6.

63. G.S. Berger, "Intratubal Insemination," *Fertility and Sterility* 48 (1987): 328-30.

64. R.P.S. Jansen et al., "Pregnancies After Ultrasound-Guided Fallopian Insemination with Cryostored Donor Semen," *Fertility and Sterility* 49 (1988): 920-22.

65. OTA, *Infertility*, 127.

66. Sperm washing must occur with intrauterine insemination because seminal plasma may be irritating to the lining of the uterus. CFAS and SOGC, *Ethical Considerations*, 6.

67. OTA, *Infertility*, 127.

68. Ibid.

69. Ibid.

70. Ibid.; Alexander and Ackerman, "Therapeutic Insemination."

71. See Small and Turksoy, "View of Artificial Insemination"; OTA, *Infertility*; and Berger, "Intratubal Insemination."

72. The medical risks of these drug treatments are discussed in the section entitled Medical Risks.

73. Olshansky and Sammons, "Artificial Insemination."

74. M. Saaranen, M. Suhonen, and S. Saarikoski, "Ultrasound in the Timing of Artificial Insemination with Frozen Donor Semen," *Gynecologic and Obstetric Investigation* 22 (1986): 140-44.

75. See E. Noble, *Having Your Baby by Donor Insemination: A Complete Resource Guide* (Boston: Houghton Mifflin, 1987).

76. G.E. Hanscombe and J. Forster, *Rocking the Cradle: Lesbian Mothers: A Challenge in Family Living* (Boston: Alyson, 1982).

77. S. Brodribb, "Off the Pedestal and onto the Block? Motherhood, Reproductive Technologies, and the Canadian State," *Canadian Journal of Women and the Law* 1 (1986): 407-23.

78. For more detailed descriptions of the initial SI phenomena, see N. Adamson, "Self-Insemination," *Healthsharing* 6 (Fall 1985): 8-9; R.D. Klein, "Doing It Ourselves: Self Insemination," in *Test-Tube Women: What Future for Motherhood?* ed. R. Arditti, R.D. Klein, and S. Minden (London: Pandora Press, 1984), 382-90; alternative press pamphlets such as Feminist Self-Insemination Group, *Self-Insemination* (London: The Feminist Self-Insemination Group, 1980); and C. Pies, *Considering Parenthood: A Handbook for Lesbians* (San Francisco: Spinsters Book, 1985).
79. D. Richardson, *Women and AIDS* (New York: Methuen, 1988).
80. K. Arnup, "Brief Presented to the Royal Commission on New Reproductive Technologies" (Toronto, 20 November 1990); Halifax Lesbian Committee on Reproductive Technologies, "Brief to the Royal Commission on Reproductive Technologies" (Halifax, 17 October 1990).
81. S. Wilkes, "Not as Easy as 1-2-3: Lesbians Trying to Get Pregnant," *Rites for Lesbian and Gay Liberation* 1 (March 1985): 13.
82. The partner's brother is a popular choice.
83. Pies, *Considering Parenthood*; J.A. Schulenburg, *Gay Parenting* (New York: Anchor Press/Doubleday, 1985).
84. R.H. Blank, *Regulating Reproduction* (New York: Columbia University Press, 1990); K.A. Lahey, "Alternative Insemination: Facing the Conceivable Options," *Broadside* 8 (October 1986): 8-10.
85. F. Hornstein and C. Pies, "Baby M and the Gay Family," *Out/Look* 1 (Spring 1988): 79.
86. Figures would be presumably much higher now, but proportionally similar.
87. Costs indicated are for each insemination.
88. This 1986 survey conducted by the Office of Technology Assessment in the United States was reported in the OTA report, *Infertility*, 141.
89. OTA, *Artificial Insemination*, 49.
90. All figures are per attempt. OTA, *Infertility*, 141.
91. Costs for IVF in Canada are estimated at between \$5 000 and \$10 000 per cycle. Based on personal discussions of preliminary data with Ron Goeree, for a report to the Royal Commission on New Reproductive Technologies.
92. All costs in U.S. dollars. OTA, *Infertility*, 141.
93. L. Hayward, D.E. Flett, and C. Davis, "The Child Health Study: Record Linkage Feasibility of Selected Data Bases: A Catalogue," in *New Reproductive Technologies and the Health Care System: The Case for Evidence-Based Medicine*, vol. 11 of the research studies of the Royal Commission on New Reproductive Technologies (Ottawa: Minister of Supply and Services Canada, 1993).
94. This debate about payment to donors is discussed in the section entitled Donors.
95. Achilles, "Social Meanings."
96. The \$15 cost was reported by a recipient who underwent DI some time ago and probably does not reflect the current situation. The \$2 000 fee was reported by a

recipient attending a clinic in Toronto in October 1988 — the sperm was frozen and imported from the United States. The cost of \$2 000 was for each straw (each cycle would involve at least two straws).

97. The woman took the issue to her ombudsman, and the Ministry of Health reports that the issue is still under review. Personal communication with the Women's Health Bureau, Ministry of Health, Ontario.

98. Success rates for IVF, for example, range from 10% to 30% (pregnancy rate per treatment) and a much lower take-home-baby rate, estimated from 3% to 15%. See H.E. Bryant, *The Infertility Dilemma* (Ottawa: Canadian Advisory Council on the Status of Women, 1990), 13. The OTA report cites an overall 6% success rate in the United States. OTA, *Infertility*, 295.

99. S.E. Brown and A.A. Yuzpe, "Recent Advances in the Treatment of Infertility," *Ontario Medicine* 4 (25 November 1985): 10, as cited in Ontario, Ministry of Health, *Recommended Guidelines*.

100. S.G. Scott et al., "Therapeutic Donor Insemination with Frozen Semen," *Canadian Medical Association Journal* 143 (1990): 273-78.

101. It would be considered unethical to use fresh sperm in a randomized trial because of the risk of transmission of HIV.

102. See Scott et al., "Therapeutic Donor Insemination," 275. They define their terms as follows:

- crude pregnancy rate: the proportion of recipients who were in the program and became pregnant.
- drop-out rate: the proportion of recipients who did not complete a series of six insemination cycles and who did not become pregnant.
- fecundability rate: the probability of a pregnancy occurring per cycle of treatment; usually expressed as a fractional value, the rate may also be multiplied by 100 to give a "percentage chance" of pregnancy.
- theoretical cumulative pregnancy rate: the cumulative proportion of recipients who began a series of six cycles of insemination and who became pregnant; this rate, which is calculated from the observed monthly fecundability rates, does not account for the women who dropped out before completing the series of insemination cycles.
- "take-home baby rate": the likelihood of a recipient having a liveborn baby after a series of six insemination cycles (i.e., after exclusion of those who dropped out and correction for spontaneous abortions); the concept was developed in recent years to express the results of in-vitro fertilization and embryo transfer.

(This definition of take-home-baby rate has been criticized for skewing results since it does not include all of the recipients who started in a program.)

103. D. Le Lannou and J. Lansac, "Artificial Procreation with Frozen Donor Semen: Experience of the French Federation CECOS," *Human Reproduction* 4 (1989): 757-61. The female recipients are described as heterogeneous, including fertile, subfertile, and infertile women.

104. A.W.Y. Wong et al., "Factors Affecting the Success of Artificial Insemination by Frozen Donor Semen," *International Journal of Fertility* 34 (1989): 25-29.
105. A.O. Trounson et al., "Artificial Insemination by Frozen Donor Semen: Results of Multicentre Australian Experience," *International Journal of Andrology* 4 (1981): 227-34.
106. G. Kovacs et al., "Artificial Insemination with Cryopreserved Donor Semen: A Decade of Experience," *British Journal of Obstetrics and Gynaecology* 95 (1988): 354-60.
107. W.R. Gillett et al., "Pregnancy Rates with Artificial Insemination by Donor: The Influence of the Cryopreservation Method and Coexistent Infertility Factors," *New Zealand Medical Journal* 99 (1986): 891-93.
108. There is no attempt to standardize other relevant factors affecting success rates here, such as sperm motility, cryopreservation methods, size of sample, or female fertility factors.
109. A. Edvinsson et al., "Factors in the Infertile Couple Influencing the Success of Artificial Insemination with Donor Semen," *Fertility and Sterility* 53 (1990): 81-87.
110. Ibid.
111. The use of clomiphene citrate in this study affected the success rate negatively. A.R. Martinez et al., "Intrauterine Insemination Does and Clomiphene Citrate Does Not Improve Fecundity in Couples with Infertility Due to Male or Idiopathic Factors: A Prospective, Randomized, Controlled Study," *Fertility and Sterility* 53 (1990): 847-53.
112. Wong et al., "Factors Affecting the Success."
113. Gillett et al., "Pregnancy Rates."
114. B.A. Keel and B.W. Webster, "Semen Analysis Data from Fresh and Cryopreserved Donor Ejaculates: Comparison of Cryoprotectants and Pregnancy Rates," *Fertility and Sterility* 52 (1989): 100-105.
115. Lower success with more complex methods of insemination may be due to more problematic infertility. In any case, it is difficult to compare success rates among different methods of insemination because so many factors cannot be controlled.
116. Byrd et al., "A Prospective Randomized Study."
117. Curie-Cohen et al., "Current Practice of Artificial Insemination," 588.
118. Ibid.
119. OTA, *Artificial Insemination*, 46.
120. This is the philosophy expressed in most guidelines and reports up until the mid to late 1980s at which point the absolute value of secrecy and anonymity are questioned. See, for example, the AFS reports on DI published in 1980, 1986, and 1990.
121. Jarrell and Milner, "Artificial Insemination," 117.
122. Australia, Commonwealth of Australia, National Bioethics Consultative Committee, *Reproductive Technology* (Canberra: National Bioethics Consultative Committee, 1989), 12-13.

123. Ibid.
124. *Act on Insemination*, 1 March 1985, Sweden (1984:1140).
125. National Bioethics Consultative Committee, *Reproductive Technology*, 14.
126. Australia, Victoria, Committee to Consider the Social, Ethical and Legal Issues Arising from In Vitro Fertilization, *Report on Donor Gametes in IVF* (Melbourne: G.P.O., 1986) (commonly referred to as the Waller Report); M. Warnock, *A Question of Life: The Warnock Report on Human Fertilisation and Embryology* (Oxford: Basil Blackwell, 1985).
127. See, for example, Ontario Law Reform Commission, *Report on Human Artificial Reproduction and Related Matters*, 2 vols. (Toronto: Ontario Ministry of the Attorney General, 1985).
128. Ibid., vol. 1, 18.
129. Hayward et al., "The Child Health Study."
130. Quebec, Comité de travail sur les nouvelles technologies de reproduction humaine, *Summary of the Report* (Quebec: Ministère de la Santé et des Services sociaux, 1988), 4. Information about whether this system has been implemented was not available during the Hayward et al. survey of provincial data bases.
131. The Ontario Health Insurance Plan or OHIP is now referred to as the Provincial Insurance Plan.
132. Again, the figures give limited information. These numbers indicate the number of procedures and do not give information about the number of patients, type of insemination, or number of live births.
133. Ontario, Ministry of Health, *Recommended Guidelines*, 3.
134. Health and Welfare Canada, *Storage and Utilization*.
135. F. Orr, "Sperm Donated Mainly for Money," *Globe and Mail* (24 April 1981): 15.
136. Probably not AIH since it tends to be more complicated. See Achilles, "Social Meanings," for reference to office-based DI practice. Also, information provided by the New Reproductive Alternatives Society, a British Columbia-based group of parents of DI children who provide support for members and lobby the government for changes in DI practice.
137. OTA, *Artificial Insemination*, 3.
138. Noble, *Having Your Baby*.
139. B.Z. Sokoloff, "Alternative Methods of Reproduction: Effects on the Child," *Clinical Pediatrics* 26 (1987): 11-17.
140. Warnock, *A Question of Life*, 19.
141. A. Fagot-Largeault, "In France, Debate and Indecision," *Hastings Center Report* 17 (Suppl.)(June 1987): 10-12.
142. Noble, *Having Your Baby*.
143. K. Bai, Y. Shirai, and M. Ishii, "In Japan, Consensus Has Limits," *Hastings Center Report* 17 (Suppl.)(June 1987): 18-20.
144. W.J. Finegold, *Artificial Insemination* (Springfield: Charles C. Thomas, 1964), 6.

145. E. Home, "An Account of the Dissection of an Hermaphrodite Dog," *Philosophical Transactions of the Royal Society of London* 89 (Part 2)(1799): 157, as cited in Small and Turksoy, "A View of Artificial Insemination."
146. J.-E. Rioux and C.D.F. Ackman, "Artificial Insemination and Sperm Banks: The Canadian Experience," in *Human Artificial Insemination and Semen Preservation*, ed. G. David and W.S. Price (New York: Plenum Press, 1980), 31.
147. Achilles, "Social Meanings." Based on interviews with a Canadian DI offspring now in her forties and a sperm donor who donated in Toronto in the late 1950s and early 1960s.
148. One Toronto physician has suggested that his father (also a physician) practised donor insemination as early as the 1930s and 1940s. Anonymous interview with Toronto physician.
149. See, for example, Finegold, *Artificial Insemination*. See also R.T. Francoeur, *Utopian Motherhood*, 3d ed. (South Brunswick: A.S. Barnes, 1977), and A.T. Gregoire and R.C. Mayer, "The Impregnators," *Fertility and Sterility* 16 (1965): 130-34, for a history of artificial insemination in the United States.
150. An extensive discussion of the relationship between animal husbandry and artificial insemination (and other new reproductive technologies) in humans can be found in G. Corea, *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs* (New York: Harper and Row, 1985).
151. Small and Turksoy, "View of Artificial Insemination," 106.
152. Ibid.
153. That artificial insemination in animals might be used for similar purposes in humans is certainly one of the fears that its use has raised.
154. A developmental abnormality in which the male urethra opens on the underside of the penis or on the perineum.
155. Home, "An Account of the Dissection."
156. Francoeur, *Utopian Motherhood*.
157. Hummel and Talbert, "Current Management," 919.
158. Gregoire and Mayer, "The Impregnators."
159. Ibid.
160. R.G. Bunge and J.K. Sherman, "Fertilizing Capacity of Frozen Human Spermatozoa," *Nature* 172 (1953), 767.
161. P. Liljestrand, "Patriarchy Updated" (San Francisco: University of California, Department of Social and Behavioral Science, 1988).
162. Corea, *The Mother Machine*.
163. Small and Turksoy, "View of Artificial Insemination."
164. Liljestrand, "Patriarchy Updated."
165. Ibid.
166. Ibid.
167. Compared to, for example, attention paid to IVF and preconception contracts.

168. B.M. Dickens, *Medico-Legal Aspects of Family Law* (Toronto: Butterworths, 1979).
169. Church of England, Archbishop of Canterbury's Commission on Artificial Human Insemination, *Artificial Human Insemination: Report of a Commission Appointed by His Grace the Archbishop of Canterbury* [Geoffrey Francis Fisher] (London: Society for Promoting Christian Knowledge, 1948).
170. United Kingdom, Departmental Committee on Human Artificial Insemination, *Report*, Cmnd 1105 (London: HMSO, 1960) (The Earl of Feversham, Chair).
171. British Medical Association, "Annual Report of Council: Appendix V: Report of Panel on Human Artificial Insemination," *British Medical Journal* (Suppl.) (7 April 1973): 3-5.
172. R. Achilles, "Donor Insemination: The Future of a Public Secret," in *The Future of Human Reproduction*, ed. C. Overall (Toronto: Women's Press, 1989).
173. There is, in fact, a built-in eugenic component to DI to the extent that donors are selected for certain more socially valued characteristics or drawn exclusively from, for example, the professions and the middle class in general. There is no systematic empirical information on how physicians obtain donors in Canada.
174. Gregoire and Mayer, "The Impregnators."
175. For a more extensive discussion of this issue, see Corea, *The Mother Machine*; N. Pfeffer, "Artificial Insemination, In-Vitro Fertilization, and the Stigma of Infertility," in *Reproductive Technologies: Gender, Motherhood and Medicine*, ed. M. Stanworth (Minneapolis: University of Minnesota Press, 1987), 81-97; and R. Snowden and G.D. Mitchell, *The Artificial Family* (London: Allen and Unwin, 1981).
176. OTA, *Artificial Insemination*, 67.
177. Achilles, "Donor Insemination."
178. R. Achilles, "Anonymity and Secrecy in Donor Insemination: In Whose Best Interests?" in *Sortir la maternité du laboratoire* (Quebec: Conseil du statut de la femme, 1988), 157.
179. See, for example, B.A. Brody and B.C. White, "Religious and Secular Perspectives About Infertility Prevention and Treatment," in U.S., Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices*, vol. 4: *Social and Medical Concerns* (Washington, DC: U.S. Government Printing Office, 1988).
180. This section reviews surveys of populations which do not focus exclusively on the infertile population or participants in new reproductive technologies. Studies of these populations as well as studies that focus on specific issues within the technologies, particularly DI, are reviewed in the section on recipients.
181. Angus Reid Group, "Perceptions and Attitudes of Canadians Regarding New Reproductive Technologies," paper prepared for the Royal Commission on New Reproductive Technologies (Ottawa: 1991). This refers to the summary only. The full report was not available at the time of writing.
182. R. Rowland and C. Ruffin, "Community Attitudes to Artificial Insemination by Husband or Donor, In Vitro Fertilization, and Adoption," *Clinical Reproduction and Fertility* 2 (1983): 195-206.

183. G. Rawson, "Human Artificial Insemination by Donor and the Australian Community," *Clinical Reproduction and Fertility* 3 (1985): 1-19.
184. R.L. Matteson and G. Terranova, "Social Acceptance of New Techniques of Child Conception," *Journal of Social Psychology* 101 (1977): 225-29.
185. P.C. Dunn, I.J. Ryan, and K. O'Brien, "College Students' Acceptance of Adoption and Five Alternative Fertilization Techniques," *Journal of Sex Research* 24 (1988): 282-87.
186. K.W. Back and R. Snowden, "The Anonymity of the Gamete Donor," *Journal of Psychosomatic Obstetrics and Gynaecology* 9 (1988): 191-98.
187. M. Gordon, "Inconceivable?" *Mirabella* (July 1991): 60-63.
188. M.V. Sauer et al., "Survey of Attitudes Regarding the Use of Siblings for Gamete Donation," *Fertility and Sterility* 49 (1988): 721-22. One interpretation of these findings is that egg donation is a surgical procedure and the exchange occurs between two women. Sperm donation involves masturbation and occurs between a man and a woman, in fact replacing sexual intercourse.
189. Health and Welfare Canada, *Storage and Utilization*, 45.
190. The majority of the studies on donors are from Australia because of the emphasis on issues related to donors in commissions and inquiries there.
191. R. Rowland, "Attitudes and Opinions of Donors on an Artificial Insemination by Donor (AID) Programme," *Clinical Reproduction and Fertility* 2 (1983): 249-59.
192. M.K. Nicholas and J.P. Tyler, "Characteristics, Attitudes and Personalities of AI Donors," *Clinical Reproduction and Fertility* 2 (1983): 47-54.
193. K.R. Daniels, "Semen Donors in New Zealand: Their Characteristics and Attitudes," *Clinical Reproduction and Fertility* 5 (1987): 177-90.
194. Achilles, "Donor Insemination." Since the sample was self-selecting, it may be that medical students would be less likely to participate in a study.
195. CFAS, *Guidelines for Therapeutic Donor Insemination*, 5.
196. Self-reported motivational research is problematic in many respects, including the possibility that subjects may report what they feel is socially acceptable and that motivations may change over time. However, the task here is to report on the issues identified in existing research.
197. The purpose of an exploratory study is to identify the range of possible issues, but it is not useful to estimate the distribution of these issues in a population.
198. Achilles, "Social Meanings."
199. See Rowland, "Attitudes and Opinions"; Daniels, "Semen Donors"; Nicholas and Tyler, "Characteristics, Attitudes"; and D.J. Handelsman et al., "Psychological and Attitudinal Profiles in Donors for Artificial Insemination," *Fertility and Sterility* 43 (1985): 95-101.
200. Achilles, "Social Meanings," 67.
201. Achilles, "Social Meanings."
202. S.B. Novaes, "Social Integration of Technical Innovation: Sperm Banking and AID in France and in the United States," *Social Science Information* 24 (1985): 569-84.

203. G.J. Annas, "Fathers Anonymous: Beyond the Best Interests of the Sperm Donor," *Child Welfare* 60 (1981): 161-74.
204. B. Knoppers and E. Sloss, "Recent Developments: Legislative Reforms in Reproductive Technology," *Ottawa Law Review* 18 (1986), 683.
205. *Ibid.*, 684.
206. CFAS and SOGC, *Ethical Considerations*, 41.
207. Knoppers and Sloss, "Recent Developments," 685.
208. Comité de travail sur les nouvelles technologies de reproduction humaine, *Rapport*.
209. AFS, "New Guidelines: 1990," 4S. The guidelines state: "There is a reasonable consensus that the danger of an increase in consanguinity over that which occurs in the general population is essentially nil if the limit is set at ≤ 10 pregnancies per donor. This suggestion would require modification if the population using donor insemination represented an isolated subgroup." Presumably the limit would be less than 10 if the population served was a smaller isolated group.
210. American Association of Tissue Banks, *Standards for Tissue Banking* (Rockville: American Association of Tissue Banks, 1984).
211. Achilles, "Social Meanings," 137.
212. CFAS and SOGC, *Ethical Considerations*, 35.
213. Rowland, "Attitudes and Opinions"; Handelsman et al., "Psychological and Attitudinal Profiles"; Daniels, "Semen Donors."
214. Rowland, "Attitudes and Opinions," 256.
215. Daniels, "Semen Donors," 183.
216. Handelsman et al., "Psychological and Attitudinal Profiles," 98.
217. A. Walker, S. Gregson, and E. McLaughlin, "Attitudes Towards Donor Insemination — A Post-Warnock Survey," *Human Reproduction* 2 (1987): 745-50.
218. L. Jonsson, "Artificial Insemination in Sweden," in *Sortir la maternité du laboratoire* (Quebec: Conseil du statut de la femme, 1988), 154.
219. OTA, *Artificial Insemination*, 65.
220. Knoppers and Sloss, "Recent Developments," 675.
221. B. Freedman et al., "Non-Medical Selection Criteria for Artificial Insemination and Adoption," *Clinical Reproduction and Fertility* 5 (1987): 55-66.
222. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 275.
223. Comité de travail sur les nouvelles technologies de reproduction humaine, *Summary of the Report*, 9.
224. Jonsson, "Artificial Insemination in Sweden," 150.
225. Warnock, *A Question of Life*, 11.
226. CFAS and SOGC, *Ethical Considerations*, 28.
227. See M.A. Ryan, "The Argument for Unlimited Procreative Liberty: A Feminist Critique," *Hastings Center Report* 20 (July-August 1990): 6-12, for an interesting

discussion of this issue, and J.A. Robertson, "Procreative Liberty and the Control of Conception, Pregnancy, and Childbirth," *Virginia Law Review* 69 (1983): 405-62, for another viewpoint.

228. See, for example, M. Humphrey and H. Humphrey, "Marital Relationships in Couples Seeking Donor Insemination," *Journal of Biosocial Science* 19 (1987): 209-19; and D.N. Cox and A.E. Reading, "Personality Profiles of Women Attending an Artificial Insemination by Donor Clinic," *Personality and Individual Differences* 4 (1983): 213-14.

229. D.M. Berger, "Psychological Aspects of Donor Insemination," *International Journal of Psychiatry in Medicine* 12 (1982): 49-57; and D.M. Berger et al., "Psychological Patterns in Donor Insemination Couples," *Canadian Journal of Psychiatry* 31 (1986): 818-23.

230. Research on infertility and adoption supports this two-stage process.

231. Berger et al., "Psychological Patterns," 821.

232. Achilles, "Social Meanings," 152.

233. A. David and D. Avidan, "Artificial Insemination Donor: Clinical and Psychologic Aspects," *Fertility and Sterility* 27 (1976): 528-32.

234. K.J. Connolly, R.J. Edelmann, and I.D. Cooke, "Distress and Marital Problems Associated with Infertility," *Journal of Reproductive Infertility and Psychology* 5 (1987): 49-57.

235. CFAS and SOGC, *Ethical Considerations*, 4.

236. This practice has been documented in the United States, Australia, and Britain. I am unaware of documentation of its practice in Canada. See J. Lorber, "Choice, Gift, or Patriarchal Bargain? Women's Consent to *In Vitro* Fertilization in Male Infertility," *Hypatia* 4 (Fall 1989): 23-36.

237. Several crucial legal matters remain unresolved in Canada regarding DI. These include the child's legal status, clarity about the legal rights of the (social) father, the severing of the sperm donors' rights, what should be recorded on the birth certificate, physician liability, record-keeping (Is the donor a patient?), etc. See Ontario Law Reform Commission, *Report on Human Artificial Reproduction*.

238. G. Gerstel, "A Psychoanalytic View of Artificial Donor Insemination," *American Journal of Psychotherapy* 17 (1963): 64-77.

239. B. Rubin, "Psychological Aspects of Human Artificial Insemination," *Archives of General Psychiatry* 13 (1965): 121-32.

240. A. Clamar, "Psychological Implications of Donor Insemination," *American Journal of Psychoanalysis* 40 (1980): 173-77.

241. Achilles, "Social Meanings," 32.

242. Achilles, "Social Meanings."

243. *Ibid.*, 86.

244. B. Harvey and A. Harvey, "How Couples Feel About DI," *Contemporary Ob-Gyn* 9 (5)(1977): 93-97.

245. Clamar, "Psychological Implications."

246. A. Baran and R. Pannor, *Lethal Secrets* (New York: Warner Books, 1989), 47.

247. Anonymous, personal communication, August 1990.
248. See, for example, W.W. Watters and J. Sousa-Poza, "Psychiatric Aspects of Artificial Insemination (Donor)," *Canadian Medical Association Journal* 95 (1966): 106-13; and Gerstel, "A Psychoanalytic View."
249. H. Rosenkvist, "Donor Insemination: A Prospective Socio-Psychiatric Investigation of 48 Couples," *Danish Medical Bulletin* 28 (1981): 133-48.
250. *Ibid.*, 143.
251. E. Bendvold et al., "Marital Break-Up among Couples Raising Families by Artificial Insemination by Donor," *Fertility and Sterility* 51 (1989): 980-83.
252. Berger et al., "Psychological Patterns," 822.
253. I. Milsom and P. Bergman, "A Study of Parental Attitudes After Donor Insemination (AID)," *Acta Obstetrica et Gynecologica Scandinavica* 61 (1982): 125-28.
254. J.-C. Czyba and M. Chevret, "Psychological Reactions of Couples to Artificial Insemination with Donor Sperm," *International Journal of Fertility* 24 (1979): 240-45.
255. R. Snowden, G.D. Mitchell, and E.M. Snowden, *Artificial Reproduction* (London: Allen and Unwin, 1983), 72.
256. See C.E. Clayton and G.T. Kovacs, "AID Offspring: Initial Follow-Up Study of 50 Couples," *Medical Journal of Australia* (17 April 1982): 338-39; Milsom and Bergman, "A Study of Parental Attitudes"; and C. Manuel, M. Chevret, and J.-C. Czyba, "Handling of Secrecy by AID Couples," in *Human Artificial Insemination and Semen Preservation*, ed. G. David and W.S. Price (New York: Plenum Press, 1980), 419-29.
257. Achilles, "Social Meanings."
258. *Ibid.*; Baran and Pannor, *Lethal Secrets*.
259. Manuel et al., "Handling of Secrecy."
260. Snowden and Mitchell, *The Artificial Family*; Achilles, "Social Meanings."
261. Reported by recipients in a qualitative and exploratory study. See Achilles, "Social Meanings."
262. This process is facilitated and confirmed by the importance given to matching physical characteristics of the sperm donor to the recipients. This is true whether the recipient(s) is/are heterosexual, gay, or single. See Achilles, "Social Meanings."
263. See Achilles, "Social Meanings."
264. The practice of open adoption is fairly new. It consists of birth parents and adoptive parents meeting and the birth parent negotiating some level of contact with the adoptive parents and the child.
265. Compare the AFS statements in the 1980 guidelines on DI ("There is no benefit and considerable risk to informing friends, relatives, ministers, and offspring of the procedure.") to the 1990 statement of the Ethics Committee of the AFS ("The Committee notes that there is a lack of information about whether secrecy is better for the child."). American Fertility Society, Ethics Committee, "Ethical

Considerations of the New Reproductive Technologies," *Fertility and Sterility* 53 (Suppl. 2)(1990), 44S.

266. CFAS and SOGC, *Ethical Considerations*, 22.

267. Australia, Commonwealth of Australia, National Bioethics Consultative Committee, *Access to Information* (Canberra: National Bioethics Consultative Committee, 1988); National Bioethics Consultative Committee, *Reproductive Technology*.

268. National Bioethics Consultative Committee, *Reproductive Technology*, 11.

269. Achilles, "Donor Insemination," 116.

270. R. Iizuka et al., "The Physical and Mental Development of Children Born Following Artificial Insemination," *International Journal of Fertility* 13 (1968): 24-32.

271. Sokoloff, "Alternative Methods."

272. Ibid.

273. R.J. Edelman, "Psychological Aspects of Artificial Insemination by Donor," *Journal of Psychosomatic Obstetrics and Gynaecology* 10 (1989): 3-13.

274. B.E. Menning, "Donor Insemination: the Psychological Issues," *Contemporary Ob-Gyn* 18 (33)(1989): 3-13.

275. R. Snowden and E. Snowden, *The Gift of a Child* (London: Allen and Unwin, 1984), 108.

276. Achilles, "Social Meanings"; Baran and Pannor, *Lethal Secrets*.

277. Anonymous, personal communication, October 1990.

278. Achilles, "Social Meanings."

279. Ibid., 78.

280. H.J. Sants, "Genealogical Bewilderment in Children with Substitute Parents," *British Journal of Medical Psychology* 37 (1964), 138.

281. National Bioethics Consultative Committee, *Access to Information*, 5.

282. J.P. Triseliotis, *In Search of Origins* (London: Routledge and Kegan Paul, 1973).

283. M. Humphrey and H. Humphrey, "A Fresh Look at Genealogical Bewilderment," *British Journal of Medical Psychology* 59 (1986): 133-40.

284. S. Rubin, "A Spermdonor Baby Grows Up," in *The Technological Woman*, ed. J. Zimmerman (New York: Praeger, 1983), 214.

285. See Freedman et al., "Non-Medical Selection Criteria."

286. OTA, *Artificial Insemination*. The sample consisted of two sampling frames. The first was a national cross-sectional sample drawn from the universe of currently practising physicians likely to become involved in infertility therapy (general practice, family practice, or reproductive care specialists) for a total of 1 600 subjects. The second was drawn from the membership lists of two professional societies — the American Fertility Society and the American Andrology Society — for a total of 1 213 subjects.

287. OTA, *Artificial Insemination*, 57.

288. Jarrell and Milner, "Artificial Insemination," 116.

289. OTA, *Artificial Insemination*, 57-59.
290. K.R. Daniels, "The Practice of Artificial Insemination of Donor Sperm in New Zealand," *New Zealand Medical Journal* 98 (1985): 235-39.
291. Given the advent of AIDS, however, the risks from sexual intercourse are currently life-threatening.
292. CFAS guidelines are silent on this issue. The Quebec report recommends 6 pregnancies or 30 utilizations based on the 1981 Health and Welfare report on storage and utilization. The AFS recommends a limit of 10 pregnancies per donor. See the section on donors for further discussion of this issue.
293. See Stewart et al., "Transmission of Human T-Cell"; Berry et al., "Transmission of Hepatitis B"; Nagel et al., "Transmission of *Chlamydia trachomatis*"; and Mascola and Guinan, "Semen Donors."
294. H.B. Holmes, "Risks of Infertility Diagnosis and Treatment," in U.S., Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices*, vol. 4: *Social and Medical Concerns* (Washington, DC: Office of Technology Assessment, 1988).
295. See Olshansky and Sammons, "Artificial Insemination"; Allen et al., "Intrauterine Insemination"; Holmes, "Risks of Infertility"; S. Sahmay, T. Atasu, and I. Karacan, "The Effect of Intrauterine Insemination on Uterine Activity," *International Journal of Fertility* 35 (1990): 310-14.
296. Sahmay et al., "Effect of Intrauterine Insemination."
297. Holmes, "Risks of Infertility," 20.
298. *Ibid.*, 37.
299. E.E. Wallach, "Gonadotropin Treatment for the Ovulatory Patient — The Pros and Cons of Empiric Therapy for Infertility," *Fertility and Sterility* 55 (1991): 478-80; R.M. Zaner, F.H. Boehm, and G.A. Hill, "Selective Termination in Multiple Pregnancies: Ethical Considerations," *Fertility and Sterility* 54 (1990): 203-205; C. Overall, "Selective Termination of Pregnancy and Women's Reproductive Autonomy," *Hastings Center Report* 20 (May-June 1990): 6-11.
300. Wallach, "Gonadotropin Treatment," 480.
301. W.C. Dodson and A.F. Haney, "Controlled Ovarian Hyperstimulation and Intrauterine Insemination for Treatment of Infertility," *Fertility and Sterility* 55 (1991): 457-67.
302. See Freedman et al., "Non-Medical Selection Criteria."
303. The most recent directory of the CFAS is dated 1988 and does not include many of the office-based DI practitioners.
304. This is the one issue that has been surveyed nation-wide. See Freedman et al., "Non-Medical Selection Criteria."
305. The surveys of donors about issues to do with sperm donation may be skewed by the fact that these men have agreed to donate under the current conditions and agreements. There may be another pool of men who would agree to different conditions.
306. The identity-release information refers to whether the donor will agree to release information about his identity to his offspring at age 18.

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Issues and Responses: Artificial Insemination

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Executive Summary

This paper reviews ethical, social, legal, and practical issues relating to artificial insemination that have emerged during the course of the Commission's investigations. Through an analysis of transcripts of public hearings, submissions from groups and individuals, and records of roundtables, personal accounts, and small group interviews and discussions, the authors identify the issues, areas in which consensus on the issues exists, and the implications to Canadians of artificial insemination policy as it relates to married and single women.

The paper goes on to discuss aspects relating to donor insemination policy, including the Canadian context, public support, access to the procedure, donor insemination as a medical procedure, and familial relationships.

The paper concludes with a discussion of international trends in policies regarding insemination, noting the conflict between the call to bring insemination services up to the standards of other medical services and the increasing perception that rather than being a medical service, insemination is a social instrument for enabling pregnancies between unrelated women and men.

Introduction

As part of its mandate to examine new reproductive technologies (NRTs) on behalf of Canadians, the Royal Commission on New Reproductive Technologies has held hearings, solicited letters and testimony from individuals, received reports from professional associations, and commissioned expert analyses. This report highlights the ethical, social, legal, and practical issues regarding artificial insemination policy that emerge from these Canadian documents. Its purpose is not to argue for or against any of these views, but to put them in perspective for the purpose of the policy debates carried on by the Commission and the nation generally.

The report is based on material provided by the Commission documenting public hearings, donor insemination roundtables, small group interviews and discussions, background material for meetings with individuals having experienced NRTs, and submissions from groups and individuals.

Part 1 is an overview of the issues surrounding artificial insemination. It briefly describes the setting of the Commission's study, particularly its Canadian context; notes the issues specific to artificial insemination among NRTs; identifies the areas in which there is clear consensus noted in the literature on artificial insemination assembled by the Commission; and reviews several areas in which opinions are mixed in Canadian society and in which there are potential policy conflicts in the Commission's artificial insemination literature.

Part 2 discusses individual issues, amplifying and qualifying the themes identified in Part 1, and sets out the views of Canadians as revealed in these documents.

The authors are a bioethicist/philosopher and a sociologist; hence there is a focus on ethical and social issues. Purely legal and medical issues are not addressed in this report. However, the authors discuss the submissions to the Commission by the Canadian Medical Association and the Canadian Bar Association, both of which deal largely with the social issues surrounding artificial insemination. The following is a list of internal Royal Commission documents used in this report:

- Public hearings, excerpts of transcripts;
- Summaries of donor insemination roundtable;
- Summary of personal experiences (with the identity of individuals made anonymous);
- Small group interviews, written summaries;
- Letters and submitted manuscripts with names removed;
- Small group discussion (*in vitro* fertilization [IVF]);

- Background documentation for meetings with individuals (names removed); and
- Submission of new reproductive alternatives group.

The report concludes with a discussion of international trends and Canadian choices for reforms to the practice of artificial insemination.

Part 1. Overview

Context of the Report

Knowledge of artificial insemination by donor has existed for more than a century. However, although the "technology" of insemination is simple compared to the more exotic new reproductive methods, this practice has undergone changes in recent years. The spread of AIDS (acquired immunodeficiency syndrome) has focussed new attention on the safety and competence of physicians and others performing artificial insemination, resulting in calls for tightened regulation and centralization of authority. At the same time, a women's self-help movement has urged women seeking to become pregnant to use the technique at home entirely independent of the health care system.

Similarly, the family structure produced by artificial insemination by donor has been subjected to renewed examination. Inconsistent provincial laws regarding the parental status of donor and husband (if any) have provoked calls for reform and standardization; at the same time, Canadian society's increasing tolerance of diverse family patterns has introduced a fluidity into these social relationships that makes the framing of legislation on donor insemination difficult.

Most of these cross-currents are at work in countries (primarily in North America, Europe, and Oceania) in which a focussed political, legal, and bioethical debate over donor insemination has taken place. However, the Canadian context distinguishes the Commission's deliberations from those of counterpart bodies in other nations. Unlike many other nations, the Canadian people are diverse ethnically, religiously, and linguistically; moreover, provincial prerogatives in Canada are stronger than those of subnational units in other countries. At the same time, any Canadian solution to the difficult policy problems posed by donor insemination will need to be faithful to the *Canadian Charter of Rights and Freedoms* and to the Canada Health Act, which requires that health care respond to the norms of comprehensiveness, accessibility, universality, portability, and public administration. Unlike counterpart agencies in other nations, the Commission must evaluate the implications of these documents for donor insemination policy. It is not likely that viewpoints lying outside this consensus on basic political values will figure prominently in future Canadian practices.

Issues Specific to Artificial Insemination Among New Reproductive Technologies

Donor insemination can be a reproductive method in itself, or it can be used as a step in other, more complex forms of reproduction (for IVF, for example, the fertilization can make use of donated sperm). Donor insemination stands out among NRTs primarily because of its simplicity. Anyone can perform it. The risks of infection (with AIDS or other sexually transmitted diseases) or inherited disease are not necessarily higher than in ordinary sexual intercourse, and if a competent sperm bank is used, the risks are lower — even when the insemination is performed by a person with no medical training.

Due to its simplicity, donor insemination is the “new reproductive technology” with the longest history, predating today’s high-technology medicine. Over the years, laws and customs have regulated its use; we do not address donor insemination *de novo*, as we do the more exotic technologies. Moreover, the ease of performance makes donor insemination difficult to regulate and control, since the practice can be carried out secretly.

Unlike other reproductive technologies, moreover, the status of artificial insemination as a *medical* procedure has been sharply questioned. Given that medical training is not needed for efficacy, the performance of insemination itself by physicians — and doctors’ control over such matters as selection of women for insemination — is a social custom rather than a technical necessity. This is a source of ethical uncertainty, since the ethics of NRTs are to some degree understood as a branch of medical ethics, and medical societies have taken an active role in seeking to shape insemination law and policy. Whether artificial insemination has the status of a medical procedure or not also confounds the debate as to whether or not insemination should be financed through Canada’s health care system, which is intended to assure access to “medical” services.

Finally, the ethical tenets and mores governing the use of donor insemination are more intimately tied to highly charged emotional issues than those of some other technologies. For example, IVF, for all its novelty and unfamiliarity, is usually intended to deliver a child whose social parents will be the biological parents, and the occasion for IVF is a medical problem of fertility. However, in the case of donor insemination, the woman will be impregnated with the sperm of a man to whom she is not married (usually a stranger), which to some has the overtones of adultery. The question of family ties among the parties involved — mother, donor, perhaps husband or partner — is exceedingly delicate, with the potential to loom large in the remainder of the adults’ lives and that of the child. Moreover, donor insemination is the reproductive method of choice for single women and lesbians who wish to have a child on their own independent of any man, and there is diversity of opinion, in Canada as elsewhere, over the morality of this kind of reproductive arrangement. For

these reasons, the relatively simple act of donor insemination results in a great deal of complexity in any attempt to address the ethical, legal, and social issues involved.

Points of Agreement in Submissions

Though the moral issues raised by donor insemination touch on basic mores of family structure and sexuality, a considerable degree of consensus on certain policy questions touching on insemination emerges from the literature assembled by the Commission. As the literature does not report a systematic sampling of Canadian opinion, however, the following generalizations are tentative.

Both artificial insemination by donor and artificial insemination by husband are explicitly condemned by some religious groups (e.g., in official Roman Catholic dogma), but there is widespread support for insemination among Canadians consulted by the Commission. Even some "pro-life" spokespersons providing testimony to the Commission support donor insemination under certain conditions. Moreover, there is considerable agreement among the Commission's respondents on the desirability of funding artificial insemination services through the nation's health care system. Though the provinces have primary responsibility for health care provision in Canada, many respondents noted the geographical disparities in access to insemination and called for steps to ensure access without undue inconvenience. The emphasis on equality of access extended as well to the morally sensitive issue of insemination for single women and lesbians, who, unlike married women, do not turn to donor insemination because of a husband's infertility. Though some of the texts were ambiguous on this point, most seemed to favour consideration of women in these groups on the same basis as any other candidate for insemination, that is, as entitled to care conditional only on reproductive health (of the prospective mother) and on apparent suitability as a parent.

Numerous individuals and organizations consulted by the Commission criticized the lack of standardized procedures and standards in artificial insemination services. There is widespread support for consistent safety standards in sperm banking. The considerable interest in preserving records (see below) translates into support for centralized or enduring record-keeping methods. Both of these interests tend to suggest greater centralization in artificial insemination practice, including even the establishment of a national regulatory agency (with authority to regulate other reproductive technologies as well).

The psychological dimension of donor insemination also was addressed by a wide variety of respondents. Numerous individuals, including some who have had personal experience with donor insemination, spoke of the need for counselling for prospective parents considering the technique. These individuals felt that the services available to them had been inadequate in view of the difficult emotional issues raised by donor

insemination for some people. A wide range of respondents also addressed the delicate issues of secrecy and donor-tracing. Some believe that the tradition of keeping secret the origin of the child resulting from insemination made the emotional issues more difficult to deal with. Many respondents urged that the actual identity of the donor be kept on record in case it is decided later to permit the child to contact the father. In those cases, most would make these contacts conditional upon the consent of the donor, and cautioned that the donor must be made aware of the possibility of such a request at the time of donation.

Finally, almost all individuals and groups consulted by the Commission generally expressed negative attitudes toward commercialization in all aspects of donor insemination.

In sum, the Commission's hearings, the submissions, and respondents' advice tend to support the provision of donor insemination by Canada's health care system in a non-discriminatory fashion. Increased regulation and centralization of standard-setting and record-keeping are widely supported. The public seems to ask for heightened awareness of the emotional needs of the participants, and its vision of a human reproductive health care service seems to rule out commercialization.

Points of Disagreement and Contradiction in Submissions

Though a consensus seems to exist on a wide range of policy issues in artificial insemination, these views sit uneasily with the awareness, noted above, that insemination need not be performed by a physician. This tension poses a deep problem for the Commission if it wishes to recommend a policy on artificial insemination that not only tallies with the public's attitudes on the outstanding issues but also seeks to be internally consistent.

Many consulted by the Commission have challenged the notion that insemination be seen as a medical service at all. One reason for this challenge is that laypeople can perform insemination effectively, provided they are given access to sperm tested as disease-free. A second reason is that the purpose or intent of insemination is viewed as medical only as a result of social convention.

Several respondents noted the possibility of using insemination for goals unrelated to infertility, and therefore (in the conventional view) unrelated to health or medicine. The common illustrations are single women and lesbians, who turn to donor insemination to have a child without a father's involvement. Traditionally, physicians undertook only limited numbers of these cases, on the grounds that they were dedicated to relieving illness and that these women were not ill. This view, however, does not take into account a basic fact about insemination practice, which is that even in the usual cases for which it is used in medicine, the woman, married or not, is reproductively healthy. *She* has no medical reason for seeking to be inseminated. If she has an infertile partner, his medical

problem may be accepted as a reason for her to seek insemination, but this is a social fact, not a medical one. Thus, depiction of insemination of single women as "non-medical" provides the basis for viewing *all* insemination as non-medical.

Seen in this light, insemination is not inherently medical in either execution or intent. There is not a great deal of argument to the contrary in the Commission's documents (except in the case of married women); even the Canadian Medical Association agrees that there is no technical necessity for requiring that physicians carry out the technique.

The perception of insemination as non-medical has the potential to undercut several elements of the consensus on artificial insemination policy issues noted above. It threatens the belief that donor insemination should be provided at public expense since it is not clearly a "medical" service. To the extent that the technique is practised in the home and other non-medical settings, the call for stricter regulation and centralized record-keeping could not easily be satisfied. Standard procedures of care, including such ancillary services as counselling, would be difficult to enforce.

The conflict of these two perspectives — on the one hand that insemination is, at heart, non-medical, and on the other that it should be provided and regulated in the manner of medical services — did not escape the respondents' notice. One possible remedy might be to establish as public policy the useful fiction of medical status, even for singles and lesbians. The phrase *social infertility* — inability to reproduce because of social factors affecting the individual's reproductive choices — was mentioned as a partial solution to this problem. All those wishing insemination, for whatever reason, would be deemed socially infertile and entitled to medical provision of insemination services. The disadvantages to this are that the concept is an evident fiction — these women are in fact not infertile — and that the concept may give decision-making authority to physicians when there is no necessity for doing so. The alternative, however, seems to be an anarchy of individual and clinical initiatives in insemination, which would defy the kinds of regulation that the Commission's respondents clearly favoured as the remedy for the perceived defects in present-day clinical services.

The implications of this conflict of views for proposed reforms in donor insemination practice are noted at the conclusion of this paper.

Part 2. Individual Issues in Donor Insemination Policy

In the remainder of this paper, we identify a range of issues in artificial insemination policy making in the sources surveyed. These issues include the Canadian context of donor insemination policy; public support for donor insemination; the doctor and patient relationship, including a

discussion of donor insemination as a medical procedure, quality of care, and patients' experiences and needs; access to insemination — single women, lesbians, and unfit parents; familial relationships; and the adoption analogy.

The Canadian Context of Donor Insemination

The technique of donor insemination is, of course, no different in Canada than in other countries. Donor insemination policy, however, is determined by social facts and values much more than it is shaped by the technology of insemination. The distinctive features of Canadian law and society, therefore, suggest that donor insemination policy in Canada may vary from that of other countries.

Canadian Charter of Rights and Freedoms and Canada Health Act

As mentioned earlier, two Canadian legal initiatives bear directly on donor insemination policy — the *Canadian Charter of Rights and Freedoms* and the Canada Health Act. The latter establishes a national health care system that guarantees a comprehensive set of services to Canadians, while the former acts to help ensure government policies are fair. However, the bearing of each of these documents on donor insemination policy is open to different interpretations.

The Canada Health Act ensures that medical service will be generally available, but the specific list of services varies by province. The act does not specifically speak to donor insemination, and it is a matter of interpretation whether the act's provision for "comprehensiveness" requires that provinces fund donor insemination. Further, the status of insemination as "medically necessary" is controverted. Infertility itself is not a potentially life-threatening condition, and, in any case, insemination is practised on women who are *not* infertile. And as mentioned above, the ease with which donor insemination can be practised by non-physicians also threatens the status of insemination as a medical intervention.

The act's principle of "equal access" would seem to bear directly on donor insemination practices for those provinces choosing to fund insemination publicly. On the face of it, this provision would require that all those needing the service would have an equal claim on existing resources. However, the special nature of insemination once again requires interpretation. As discussed below, the claim of women who seek to be inseminated because they are married to infertile men is given "medical" status by some observers, while the claim of women seeking insemination for other reasons is not. The bearing of the rule of equal access is also made difficult to discern because the welfare of the potential child introduces third-party interests. For example, observers may disagree over whether "equal access" ensures that a woman prejudged to be an unfit mother should have the same claim on insemination services that others do. Access to insemination services is discussed further below.

Similarly, the Charter's provisions are held by several of the Commission's respondents to bear on the provision of insemination; but in some instances, the application of these principles is not entirely clear. The Canadian Bar Association (CBA) (1990, 14-15) reports that the Charter and similar legislation "provide a framework for policy analysis of such issues as determination of paternity, commercialization of reproductive tissues and eligibility to benefit from reproductive technology." But specifics are harder to come by. The CBA (*ibid.*, 39) argues that "attempts to specify marital status as a condition precedent to access to reproductive technology could be challenged" under sections 7 (liberty and security) and 15 (equality and equal protection and benefit of the law). Yet the Commission noted on several occasions that sexual orientation is not proscribed at present under the Charter.

Diversity and Tolerance

Canadian society comprises a wide variety of ethnic and cultural traditions and groups. According to the transcripts of the public hearings, the Commission heard testimony on donor insemination policy from representatives of major religious groups, indigenous peoples, families of people with hereditary diseases, and people with different sexual orientations.

Diversity and tolerance, however, are different concepts. Some who testified before the Commission did so to ask that their particular traditions be respected. Linda McDonald, President of the Yukon Indian Women's Association, explained the outlook of her people and said: "We do not want to push our beliefs on anyone, nor do we want practices which go against our beliefs to be forced upon us. Everyone must have the freedom to choose." However, others argued for restrictions for all Canadians, not just those in their own groups. Dr. Linda Hudson, President, Board of Directors, Tawow Society (Cree), maintained that donor insemination "undermines the sanctity of the family." Dr. Rosenberg of the Vancouver Section of the National Council of Jewish Women of Canada submitted that donor insemination with anonymous donors "must be stopped." The Rev. C. Carter of the Canadian Baptist Federation held that donor insemination "is a systematic violation of the marriage covenant."

Though the religious spokespersons appearing before the Commission tended to oppose donor insemination, particularly for unmarried women, there was some diversity even within particular religious traditions. Valerie Fromme, President, Right to Life of Yukon, supported donor insemination on the ground that "human life would not be destroyed in the process," and Denise Wische of Christians for Life likewise accepted donor insemination. Artificial insemination by husband, which is also condemned by the Roman Catholic Church, was supported by Dr. John Kraulis of the Christian Medical Dental Society of Canada.

Provincial Prerogatives

The choice of health care services to be covered by the provincial health insurance plans varies by province, though all provinces cover "basic" services. But is donor insemination "basic"? Few respondents made such a claim to the Commission, and some explicitly denied it. Nevertheless, there are numerous calls for uniformity in provision and coverage of donor insemination services across Canada. The Canadian Medical Association (CMA 1991, 27) warns of "a two-tier health care system in the matter of reproductive technologies ... [that] would fly in the face of a commitment at all levels of government to ensure universal and equitable access to health care services for all Canadians." The CMA further recommends that national standards be drawn up and enforced for quality and efficacy in these services. Similarly, the Law Reform Commission of Canada (1992, 121) holds that "it is essential to deal with [medically assisted procreation] on a national scale and to take a comprehensive approach ... consistency in the policies adopted is very important." What little discussion there was of the case for provincial prerogatives in donor insemination policy spoke of priority-setting because of limited funds, rather than because of any provincial variations in moral or social attitudes toward the practice. Moreover, the Commission documents examined did not give evidence of systematic differences among the provinces in these attitudes.

Public Support for Donor Insemination

Though the materials gathered by the Commission generally show widespread support for the practice of donor insemination in Canada, there are some dissident voices. Moreover, the concept of "support" is rather complex in this context.

It may be useful to distinguish three ways in which public policy may support donor insemination: (1) the practice can be lawful; (2) it can be supported by public funds (a so-called enabling factor); and (3) it can be made attractive and practical by improving the quality of the service and, most important, by bringing about the complex of laws, regulations, customs, and expectations that give determinate and satisfactory answers to such questions as paternity, fatherhood, and confidentiality. These "disposing" factors contribute to determining whether the practice will flourish as a common solution to reproductive problems.

Aside from the few religious objections noted above, the desirability of keeping donor insemination legal is agreed upon by nearly all observers. Nearly the same can be said of funding. Diane Day, of the Nova Scotia Advisory Council on the Status of Women, pointed out that "donor insemination being relatively cheap, relatively safe, relatively easy, should be made more accessible to all women," even if other NRTs are not. The Canadian Medical Association (1991, 43) "... accepts the fact that AI is an extremely cost-effective method of alleviating infertility in certain cases ...

the Association feels compelled to advocate its availability as standard health care in such cases." Others held that donor insemination is a worthier candidate for funding than fertility-limiting procedures, such as abortion or vasectomy, particularly in light of Canada's low birth rate (e.g., letter and manuscript).

Dissenting voices, aside from the religious objectors, argued in different ways. C. Aird of the Women's Health Care Centre, Peterborough, argued (with reference to NRTs generally) that "ease of access would make it even harder for women to say enough ... With improved funding for these services women and their partners will not even have financial limits to assist them in knowing when to say enough." Some expressed concern over provision of *medical* insemination services because of perceived dangers of over-medicalization, which are discussed below.

One issue that evoked a mixture of responses was the question of public funding of insemination for single women. Since their desire for insemination has nothing to do with infertility, theirs or anyone else's, there can be no pretence that insemination would be a "cure" for any "disease." Some of the opposition to this use of insemination seemed to stem from religious or moral objections to such a reproductive choice. The Canadian Medical Association (1991, 52), while avoiding any moralizing, emphasizes the concept of medical need: "in the eyes of the Association, socially funded access to artificial insemination programs should be determined solely by equitable criteria that find their root in medically diagnosable problems of infertility. More specifically, such access should not become an instrument to further economic plans or private values. Such aims are most equitably and most appropriately pursued as a matter of private endeavour within the sphere of private enterprise"; and "the mandate of the profession is to alleviate health problems" (p. 43). Though the CMA report, as noted below, holds "that assisted reproductive services should be available to all members of society on an equitable basis" (p. 100) and though it endorses a broad definition of "family" ("a basic social unit that may include children," p. 97), the insistence on funding treatment only for health problems seems to preclude public funding for the insemination of single women.

The Commission's respondents were less than unanimous in holding that these "disposing" factors should be managed so as to enhance the attractiveness of donor insemination to single women. One reason is that these factors are not always seen as barriers to access. Another is that, while provision of insemination itself seems to address a problem — childlessness — that evokes sympathy from nearly everyone, the background conditions that make insemination an attractive option involve familial mores and other social institutions about which emotions run strong and divisions deep. Nevertheless, the degree to which the practice of insemination depends on the disposing factors is great. In the nineteenth century, for example, physicians practised artificial insemination by husband (AIH) and fought off controversy by assuring their

opponents that doctors would not even consider using a stranger's sperm (Wikler and Wikler 1991); the technique, of course, was exactly the same. Thus, during an era in which donor insemination was regarded as adultery, the use of insemination techniques was limited to the problems addressed by AIH, which are less common than the male infertility that prompts artificial insemination by donor (AID). In the current era, the disposing factors that might have similar effects could include:

- the ability of couples to keep the origin of their child through donor insemination a secret;
- the belief of the potential sperm donor that his identity would be protected so that the child could not later contact him;
- for single women who turn to donor insemination to avoid having to raise a child in association with a man they value purely for procreation, an assurance that the donor would not and could not establish the rights of parenthood and paternity.

Doctor and Patient

Donor Insemination as a Medical Procedure

In our paper, "Turkey-Baster Babies: The Demedicalization of Artificial Insemination," we argued that the status of donor insemination as a medical procedure is in a sense an historical accident. Since the technique can be done by a layperson, and the occasion for its use need not be infertility or any other health problem, insemination could be a purely personal act regulated, if regulations are needed, through the legal system rather than through physician control. Our article does not deny the usefulness of physician involvement for some purposes, such as maintaining confidentiality, and it stresses the importance of assuring a supply of healthy sperm through well-functioning sperm banks; but in our view, the requirement of medical involvement, even in the standard use of donor insemination by married couples, is based on an illusion of medical necessity.

The ease with which insemination can be performed by non-physicians was noted many times in the hearings, submitted letters, and other materials available to the Commission. Even the Canadian Medical Association (1991, 98) concluded "that the profession of medicine should not necessarily be considered the only body involved in the development or delivery of techniques of assisted reproduction." Similarly, the Canadian Bar Association (1990, 33) noted that "AID can be performed with relatively little risk by unskilled persons ... [This] raise[s] the question of whether a distinction should be made between those [reproductive therapies] which should constitute the practice of medicine and those which should not be so categorized." The CBA, quoting from a B.C. committee (p. 36), also noted that in British Columbia "an exception to the practice of medicine in the

Medical Practitioners Act for 'the domestic administration of family remedies' would likely exempt AID in the home setting."

However, the desire for a safe, AIDS-free supply of sperm was noted by many respondents. Some sperm banks deal directly with women desiring insemination, thereby bypassing medical administration of insemination (though this distinction between medical administration and sperm bank supply was missed by others). Other women obtain sperm for self-insemination through trusted intermediaries, avoiding not only physicians but also sperm banks; they use the same strategies for avoiding disease that women might use in selecting partners for insemination through intercourse.

Several respondents pointed out that physician administration of donor insemination carries its own risks. K. Arnup, a teacher of women's studies, told the Commission that "at a fertility clinic ... the recipient may undergo a series of medical tests to determine whether she is herself fertile and these can range from the simple blood and urine tests to the much more complicated procedures like laparoscopies and endometrial biopsies. The doctor supervising the procedure can also prescribe a fertility drug like clomiphene or Pergonal[®] in addition to other medications to improve the chances of fertilization. Those drugs are sometimes prescribed even if the woman herself does not present a fertility problem." Here the needs of the woman and the requirements of the clinic may clash, for the medical work-up and fertility enhancements may be (in the physician's opinion) useful in increasing the likelihood of conception and therefore the efficiency of the insemination procedure, while the woman experiences the kind of invasive care usually reserved for people who, unlike herself, have health problems.

Moreover, physician involvement in the practice of artificial insemination may lead to the woman's being subjected to the personal attitudes and feelings of the physician. One woman was reminded by the physician carrying out the procedure of the Pope's stated moral opposition to donor insemination. The Canadian Medical Association (1991, 43) approvingly cites clause 16 of the CMA code of ethics in support of the statement that "individual physicians have the right to be guided by personal moral standards when it comes to deciding which medical services they will offer."

Quality of Care

As other inquiries into donor insemination have done (e.g., U.S. Congress 1988), the Commission's inquiries have turned up much anecdotal evidence of substandard medical care. Patients complained of physicians who provided insufficient information about basic procedures and protocols, or who even lied; doctors who performed no screening of donors; and clinics with an ambience experienced as cold and uncaring. Some physicians were reported as unconcerned over the possibility that siblings might meet and marry, especially in small towns or isolated neighbourhoods. One respondent spoke of a physician who allegedly

inseminated patients with his own sperm, a practice that attracted great attention in the 1992 U.S. trial of Dr. Cecil Jacobson (Jacobson produced several dozen children in his patients and consistently lied about the source of the sperm).

Those with complaints, however, are probably more likely to step forward, and, in any case, the Commission's documents do not demonstrate that these complaints are more common in the practice of donor insemination than they are in the practice of medicine generally. Nevertheless, several individuals and professional bodies emphasized a need to set standards for quality of care and to regulate the practice more carefully and consistently than has been done in the past.

Patients' Experiences and Needs

Many of those who related their personal experiences with insemination in Canada to the Commission complained of a lack of adequate counselling. For such a momentous experience, this omission was distressing. One respondent testified: "For me, on a personal level ... it was kind of like Rosemary's baby, because it was an anonymous pregnancy ... it was alien sperm and I didn't know where it had come from ... we couldn't get any information." Others reported asking numerous questions on such important matters as whether to tell the child of his or her origin and receiving little or no help from the clinical team.

Recommending or requiring that more extensive and sensitive counselling be offered to those considering donor insemination would be a straightforward remedy for this problem. Implementing it would be another matter. Some of the counselling may be limited in its helpfulness, however, by the paucity of research on the long-term adjustment of children of donor insemination and on the effects, good and bad, of maintaining secrecy. The distress felt by some of the Commission's respondents may not have been preventable, since answers to their questions are simply not available. Another issue for the Commission in considering whether to require counselling is that to the extent that donor insemination is *de-medicalized*, sound counselling may not be available for some clients. By way of contrast, genetic counselling has become a profession in itself and can be delivered by highly trained and experienced professionals, partly because the technology of genetic screening requires the patients to come to the clinic. However, the simplicity of the donor insemination technique permits it to be performed in a variety of settings, even at home where such professionalism may not be provided.

Access to Insemination

For the majority of people wishing artificial insemination, the chief barriers to access are lack of funding and facilities. In this respect the access problem is the same as for any medical service; but, in addition, because donor insemination engages feelings and attitudes about sexual morality and family relationships, and because the interests of prospective

offspring must be taken into account, traditionally access to this service has also been limited for social and moral reasons. While the occasion for most medical treatment is simply medical need, the desire for a child in itself has not been sufficient ground for physicians to inseminate a woman requesting assistance in becoming pregnant. The two (overlapping) categories of women who reported rejection by physicians when seeking insemination were single women and lesbians. This pattern is consistent with several decades' tradition of the practice of insemination in North America, though younger doctors tend to be less concerned with marital status and sexual orientation (U.S. Congress 1988).

The reasons for rejection of single women are doubts about the single woman's medical need and concern over the child being denied a father.

With respect to the first concern, the status of the single woman's desire for a child through insemination as a medical need was questioned at several points in the Commission's proceedings (e.g.: "I think in artificial insemination with donor, there are a lot of people who are speaking about a kind of technique that permits mainly just avoidance of a sexual relationship between two people who are perfectly fertile. I'm just asking why we are treating that as a health problem, and in your specific case it's because you don't have another partner. Is it a health problem if you don't have a partner of the other sex who is available to conceive? And do you think we have to provide as a society health services in this case?"). Insemination of a single woman was called "a social gesture," "a social treatment," and "a social therapy, not a medical therapy ... it's not therapeutic from the medical sense of the word."

Similar attitudes seem to underlie much of the report of the Canadian Medical Association. NRTs, it states, should come as close as possible to allowing the individual who happens to be infertile to achieve biological parenthood the way in which it occurs in the normal course of events; the report states at several points that NRTs "whose primary function is personal convenience" (p. 35) need not be developed. This emphasis on using insemination only as a remedy for medical problems seems to condone the rejection by physicians of single women who seek insemination for other reasons.

This line of questioning is internally consistent, in our view, but two quite different replies can be made. One is that the married woman's desire for insemination also reflects a social fact in that she is reproductively healthy. Though the married woman may be motivated to seek insemination because her spouse has a medical problem, the "therapy" of insemination is not performed on *him*. Unless the couple as such is considered the patient, the view that only the married woman's request for insemination springs from medical need is more or less equivalent to approving of insemination only for one kind of reason, that is, that one is married to an infertile man.

The second possible reply expands the notion of health to include the single woman's reproductive predicament. Lacking a suitable or desirable

male partner, she cannot become pregnant through intercourse. The Law Reform Commission presents the possibility of regarding this as a special kind of infertility, which might be called social infertility. This is the inability to become pregnant under prevailing social conditions, which could include lack of a spouse or other suitable sexual partner, or sexual orientation. This may seem highly artificial, and in one way it is, but it is not nonsensical. To the person suffering from this "malady," the distress may be just as acute as that of one who is infertile due to disease. More to the point, we are willing to speak of infertility as the reason for insemination of the married woman, even though the infertility is her husband's, because we think that women married to infertile men should be able to have children; this is a social fact as well. Moreover, some definitions of health are broad enough to encompass this condition. Dr. C. Simpson of the Royal University Hospital agreed that a single woman's request for insemination was a social request, but added: "That's not to mean that social requests are not part of health by the World Health Organization definition; psychological, physical, and social health exist." We comment further on the concept of social infertility below.

With respect to the second reason for rejecting women's requests for artificial insemination, the view that children born to single women are denied part of their birthright through the absence of a father is not well developed in the submissions and testimony before the Commission. It is not possible to judge from the Commission documents whether this attitude is common among Canadians. Little research has been done that assesses the success of single women and lesbian couples in raising children (Sokoloff 1987; Golombok and Rust 1986; Lewis 1980; Garfinkel and McLanahan 1986); no studies have documented serious problems among non-poor, dedicated mothers in these groups. Advocates appearing before the Commission asserted the ability of women in these groups to raise their children satisfactorily.

Advocates and opponents of single and lesbian motherhood through artificial insemination tend, we believe, to refer to very different paradigm cases. Opponents cite the well-documented travails of illegitimate children generally, even though most of these children are born to very poor, too-young mothers living in difficult circumstances. Advocates cite stories of dedicated, mature career women who plan carefully so as to have the time, energy, and funds to raise a much-wanted child under nearly ideal circumstances. Aggregate data on illegitimacy do not take account of the special circumstances of the children born to single women through insemination (e.g., the fact that the child results from a planned act of reproduction, the older age of the mothers, the higher educational attainment).

Single women and lesbians are not the only candidates for donor insemination who have been rejected as candidates by physicians. In the past, doctors reported rejecting women for a variety of reasons, some of which today seem whimsical (e.g., IQ under 120) (Wikler and Wikler 1991).

But even feminist-controlled sperm banks in California today require a psychological work-up of applicant women and insist that women with drug dependency problems and other shortcomings first seek therapy. If fitness for motherhood is a precondition, some kind of gatekeeper is needed. Physicians are not trained to judge this capability, but because donor insemination is categorized socially as a medical procedure they are in a position where they may make this determination. In any case, no other profession has ways of assessing this that would not be challenged by many.

In the opinion of the Canadian Bar Association (1990, 40), "The only legal basis for restricting eligibility ... should be the best interest of the child ... While this may leave the situation open to personal prejudices of the treating physician, the Association concluded that existing legislation prohibiting discriminatory practices should provide sufficient protection in most jurisdictions." However, Brenda Beagan of the Halifax Lesbian Committee on New Reproductive Technologies testified that "lesbians have every reason to suspect this process of defining fit motherhood. We are not likely to be considered fit. Already lesbian mothers face overwhelming odds of losing their children when custody is challenged. This will only get worse if heterosexual's [sic] standards of fit motherhood are embodied in the regulations governing the use of reproductive technologies." The report of the Canadian Medical Association, quoted above, which supported the right of physicians to answer to their own personal values, might lend support to these suspicions.

The Commission should note that rejection of single women and lesbians as candidates for donor insemination incurs costs in their safety. These women are by now well aware of the feasibility of performing insemination on their own. Assuming that their access to sperm banks is blocked, self-insemination would require the use of fresh sperm obtained informally; such sperm is not subject to tests for AIDS and other sexually transmitted diseases, nor can the donors be screened for hereditary genetic problems. Moreover, clandestine use of insemination techniques prevents the development of effective central bureaus of regulation and record-keeping, should these be desired for the well-being of the offspring.

Familial Relationships

Though nearly invisible even to many participants, the legal and social definitions of familial relationships exert one of the most powerful influences on the practice of donor insemination. In this reproductive practice, the biological father will not be the child's social father, while another person might be; without customs and laws ensuring this result, the practice of donor insemination would be a very different kind of social institution.

Donor status is in fact a social contrivance. Men who are classified as donors procreate but have none of the rights and responsibilities of

fatherhood. In this respect they are treated differently from men who father children by sexual intercourse, even if both mother and father wished the father's role only to be that of procreator. These men are called "fathers" rather than "donors" and are subject to paternity suits. Their status as fathers is involuntary, once the child is born; part of the burden of caring for the child is assigned to the man, not assumed by him.

Seen in this light, the procedures of donor insemination appear to be designed to ensure that this status of responsibility for the child is avoided in a permanent and visible way. The use of the physician as intermediary between donor and recipient detaches the donor from his sperm in the view of the recipient and others. The token payment to the donor alienates the sperm as property and further distinguishes the act of sperm donation from parenting. The practice of secrecy, perhaps less common in recent years, obscures the donor's role altogether except in the minds of those in the know.

It is thus of interest that not all Canadian provinces have adopted laws that provide unambiguous and unchallengeable legal foundations to these social classifications. American state laws, however, are in many cases also unclear with respect to the status of donors in the case of unmarried women, for the laws governing artificial insemination generally state that the (social) father of the child will be the woman's husband. Where there is no husband, the titles of "father" and "donor" are effectively left undefined, and there is no underlying fact of the matter that determines these statuses in the absence of a social classification.

Where the practice of insemination proceeds smoothly according to custom and tradition, the lack of legislation on these statuses may make little practical difference. Even if this has been the Canadian experience to date, however, new trends could make the lack of consistent legislation troublesome. The apparently increasing tendency to disclose the fact of insemination to the child and to the extended family gives the donor a role in all of their lives, and the increasing use of donor insemination by single women makes the donor's status immediately important. Indeed, some single women would not use insemination unless they could be assured that the donor would be a "donor" rather than a "father," as one lesbian mother told the Commission. Proposed legislation that would settle these questions might engage popular resistance among those who disapprove of motherhood for women in these categories, and for this reason some advocates for these women are reluctant to press for legislation.

The status of "donor" is itself undergoing a partial redefinition under pressure from those who, following the trends in adoption policy, favour record-keeping that permits later identification of donors by offspring. Whether this change in donor insemination policy would benefit children born of insemination is a matter of speculation, given the absence of long-term data on the alternative policies. Given the uncertainty, Canada might

opt for a policy of leaving the choice to the children themselves where feasible.

The Law Reform Commission has recommended that on reaching the age of majority, children should be permitted access to identifying information about the donors only if the latter consent. This Commission cited respect for the donor's privacy as the underlying principle. However, a requirement that sperm donation be permitted only to those men willing to permit later identification should count as a waiver of the privacy right and hence no wrong to the potential donors. Whether enough men will become donors in that circumstance is a question being asked in such countries as Sweden where these waivers are required. In addition, some question whether permission can really be given many years prior to the time they will be contacted, when their circumstances may have changed.

The Commission might note that the effect of permitting the identification of donors is likely to be different depending on the marital status of the recipient. The child born of insemination into a household with a husband and wife may suffer so-called genealogical bewilderment and seek to establish identity by tracing the donor. A child born to a single woman may in addition seek a more substantial link to the donor, perhaps including financial support. Donors contemplating this prospect may be reluctant to have their sperm used to inseminate women in this group. Indeed, the tendency to view insemination of single women as a variation of ordinary illegitimacy raises the possibility that a public resentful of paying the costs of raising children not supported by their fathers will insist that the donors be made to pay child support if the mothers request welfare support from the state. In fact, this has occurred in California, and the prospect may further impede access by single women to insemination.

The Adoption Analogy

In the Commission's documents, as elsewhere, ethical issues in donor insemination policy are argued by analogy with adoption. For example, the Canadian Medical Association "urges this Commission to consider that the criteria of access to AI ... include, *inter alia*, criteria such as those that are considered socially appropriate for deciding whether applicants for adoptions will be deemed suitable parents in a given case" (CMA 1991, 53). Moreover, some of those who insist that children be permitted to trace the identity of the donor point to a similar trend in adoption policy.

The force of the adoption analogy is to place primary importance on the well-being of the child. It is difficult to argue against this emphasis, but the costs of doing so should be recognized. The fact is that the interests of prospective parents sometimes are in conflict with what might seem to be the idealized interests of a prospective child. For example, a person may wish to have a child before the person becomes financially comfortable, to satisfy that person's longing for a child; the child's life may not be as fulfilled as would that of a child born later. The same may be

true in donor insemination. Those critical of single motherhood, for example, might insist that these women owe it to their potential children to ensure that the child will have two parents.

In the case of adoption, a child exists before a decision is made about placement, and there is little question that the best state policy is to obtain the best home available. With donor insemination, however, no child exists before the decision to inseminate is made, and it is *not* obvious that the best state policy is to ensure that the circumstances into which a child would be born are the best possible. This position, applied to parenthood generally, would sharply lower Canada's birth rate.

However, the CMA even insists that the adoption model's emphasis on the interests of the child is inadequate for insemination policy: "In fact, the Association would go further. It would insist that society play a role in the genesis of the new person engendered through AI that it does not play in the context of adoption. It is partly responsible for the existence of the new person. Therefore, whatever obligations fall to society in the adoption context fall to society in the context of AI, but with redoubled force" (CMA 1991, 53-54). Physicians in the past have cited this obligation in defence of the exclusion of single women and other non-traditional prospective mothers from their practice of donor insemination.

Similarly, the analogy with adoption is imperfect in considering donor identification. Women who place their children for adoption usually do so because circumstances simply do not permit raising the child on their own. Though it is an individual matter, the prospect of eventually being identified will not necessarily deter many of them from going through with the placement. On the other hand, men can easily refrain from donation if they are concerned with the possibility of being identified. Sperm donation brings little reward to the donor. As mentioned above, this is especially likely in the case of insemination of single women, and the force of the adoption analogy is therefore once again differentially troublesome to this category of prospective candidates for insemination.

Conclusion: Reforms — International Trends and Canadian Choices

The Commission's hearings, submitted letters and policy statements, and research papers demonstrate that all is not well with the practice of insemination in Canada. Complaints about the quality of service, from physician insensitivity to poor screening and record-keeping; uncertainties about the legal standing of donors and children in some provinces; concern for the psychological well-being of children biologically fathered by men unknown to them; and difficulties in accommodating those who, like single women, would appropriate the technique of insemination for novel, non-

medical ends — all of these issues underscore the timeliness of the Commission's policy review.

As noted above, we believe that some of the interests that insemination policy must affect are in tension and may not be reconciled. Those who would centralize and improve record-keeping would thereby tend to deny privacy, and would be undermined by the decentralizing tendency of de-medicalization and individual initiative. Those who would look to funding to ensure equal access to insemination services by all women who seek them are bound to emphasize the medical nature of insemination and, in effect, label reproductively healthy women as having health care needs. Greater emphasis on the best interests of prospective offspring, perhaps including identification of donors and even assurance of two-parent households, is in tension with reproductive freedom of choice for those who would otherwise remain childless.

Perhaps the most difficult conceptual problem for the Commission will be to reconcile the calls for insemination services to be brought up to the high standards of other medical services with the increasing perception that insemination is, in an important sense, not really a medical service. It is in reality a social instrument for enabling pregnancies between unrelated women and men without the consequences that usually attend adultery or sexual intercourse outside marriage; an instrument that, partly for historical reasons, has been assigned to physicians.

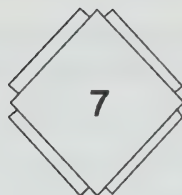
Our review of the Commission's documents suggests several possible approaches to this dilemma. One is to muddle through, deliberately failing to clarify issues that may be easier to process on a social level if left unclarified. A second approach is to de-medicalize insemination entirely, for both single and married women, while ensuring the safety of sperm supplies through a regulated system of sperm banks. A third approach, suggested by the report of the Law Reform Commission, creates the category of "social infertility" to accommodate even single women's requests for insemination along the medical model. This third approach then permits policies on insemination to conform to ordinary medical policies on such questions as quality assurance and funding priorities.

In our view, the Commission should hesitate to follow the example of France and certain other countries that have enacted or proposed highly restrictive policies, such as those requiring that insemination be performed by physicians or that it be denied to unmarried women. These policies err, we believe, on the level of both theory and practice. Their theoretical stance is questionable, since they deem insemination to be a medical technique for married women and not for others; we have argued against this perception in the foregoing. The practical problem with these policies is that they simply ignore the ease with which women can inseminate themselves without submitting to regulations affecting the practice of medicine. Indeed, the discovery of self-insemination techniques was the direct result of the rejection by insemination clinics of single women and lesbians, who then took matters into their own hands. These repressive policies thus

have an air of unreality and wishful thinking. While no set of donor insemination policies can simultaneously resolve all outstanding issues and reconcile all opposing interests, the Royal Commission on New Reproductive Technologies offers Canadians the opportunity to fashion a realistic, fair, safe, and progressive stance on donor insemination that is true to Canadian traditions and an example to other nations.

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The Social Meanings of Donor Insemination

Rona Achilles



Executive Summary

This study surveyed donor insemination (DI) participants — DI mothers, their heterosexual or lesbian partners, DI donors, and offspring — to determine how they viewed their experiences and to explore the depth and tenacity of traditional beliefs regarding biological ties, parental roles, and family structure.

Seventy-two respondents described their experiences verbally and in writing in this qualitative study. Data indicated that contradictory views are held, sometimes by the same person, regarding the significance and relevance of biological parent-child ties and traditional family forms. Contradictory views were also expressed on the issues of anonymity and secrecy.

Some recommendations of the Ontario Law Reform Commission concerning DI are examined in the light of research findings, and the sociological, medical, and legal implications of the findings are discussed.

Introduction

Donor Insemination as a Sociological Issue

The family, broadly defined, is traditionally perceived as the milieu in which the bonds of marriage and parenthood are established and

sustained. The influence of a variety of social forces, however, challenges the accuracy of this image. Marriages without children, non-marital unions, and parenthood outside of marriage are among the social trends that necessitate recognition of diverse family forms. Rather than *the* family, generally understood in its traditional nuclear form, empirical investigation documents the existence of a variety of families.¹ This study explores the experience of families created through donor insemination (DI) and illuminates underlying cultural assumptions about the family.

Artificial insemination is a simple procedure in which semen, obtained through masturbation, is inserted mechanically into a woman's vagina, usually with a syringe-like instrument.² Artificial insemination, in other words, is simply a replacement for sexual intercourse. The various types of artificial insemination are distinguished by the relationship of the source of sperm to the recipient. When sperm is obtained from the woman's husband or partner, the procedure is called artificial insemination homologous (AIH); when sperm is obtained from a man other than the husband or partner, it is termed DI. If the two are mixed (donor and husband's sperm), the procedure is called artificial insemination combined (AIC).³

The present study is limited to a sociological investigation of DI and its implications for family structure. The social organization of DI and the experience of participants are informative about cultural assumptions concerning parental roles. In particular, the study provides a vehicle for unearthing deeply embedded beliefs about the social meaning of biological ties and the persistence of biologically linked parental roles as the norm.

Typically, the term "parent" (mother or father) refers to an individual who assumes both biological and social components of the role. In other words, those who beget are also assigned the social task of child-rearing. When this is not the case, as with adoption, foster parenthood, or step-parenting, parental roles are modified by an additional descriptor: biological parents may be described, for example, as birth parents, or original or natural parents, while social parents may be described as adoptive, foster, or step-parents. Successful use of DI severs the link between biological and social fatherhood. The configuration of the parental roles created depends upon the recipient's circumstances. In heterosexual couples, the DI mother's partner becomes the social father; in lesbian couples, the mother's partner becomes a social mother (or co-mother). If the DI mother is single, there is no second social parent. In all instances, however, the sperm donor is the biological father and the DI mother is both biological and social mother.

The situation of DI offspring is somewhat similar to that of adoptees, whose biological parents are different from their social (adoptive) parents. A more accurate social precedent is the circumstance of children in reconstituted families who live with one biological parent and one step-parent. Additionally, there are parallels with single parents who rear offspring without assistance from the second biological parent. Thus, at a

structural level the family configurations of DI offspring do not appear to be significantly different from those of a substantial portion of other families.

With such similarities and the simplicity of the procedure, the question is, why is DI a significant issue for sociological inquiry? However, the unique social dimensions of DI and the rich source of information for study of the family become explicit when the actual practice of the procedure is examined.

Description and History of the Practice of Donor Insemination

Despite the apparent simplicity of the procedure, which requires only an available source of fertile sperm, a method of inserting it into the vagina, and a knowledge of ovulation time, DI is generally practised through a complex web of social interactions and restraints. Although some women do inseminate themselves outside clinical settings, DI is defined as a medical procedure and is commonly practised in clinical settings. It is further characterized by anonymity (between the sperm donor and the recipient) and surrounded by an atmosphere of secrecy. The social reasoning underlying these defining features of the practice, anonymity and secrecy — both of which are facilitated by medicalization — is the subject of this study. The data analysis examines the way the persistence and strength of biologically linked parental roles shapes and determines these aspects of DI.

DI is described in the medical literature as a treatment or cure for male infertility.⁴ Beck, for example, states, "We are discussing a cure for a disease — male infertility — not a revolution in the reproductive process."⁵ However, DI neither cures nor treats male infertility. Rather, it is a socially constructed method of circumventing the problem of male infertility. It is precisely the untreatability of male infertility that is considered to be a medical indication for DI.

DI may be used with heterosexual couples when the male's sperm is diagnosed as inadequate, either in number or due to genetic abnormalities,⁶ and where Rh incompatibility exists. It is also a method of acquiring children for single women or lesbian couples who are without a male procreative partner. A survey of 16 Ontario DI physicians estimated that 95% of heterosexual couples who seek DI do so because of a low sperm count and 5% use it to avoid passing on genetic abnormalities to their children.⁷ The study also reported that the majority of physicians "occasionally" offer DI services to single women. In a larger U.S. survey of 379 DI physicians, 33% provided DI services to avoid transmission of genetic diseases and 9.5% provided DI for single women.⁸

It is impossible to report accurately the incidence of the procedure owing to the secrecy, uncertain legal status, absence of accessible records, and unknown frequency of the procedure outside clinical settings. As pointed out by the Ontario Law Reform Commission (OLRC), Ontario Health

Insurance Plan records do not distinguish between DI and AIH.⁹ However, even an accurate record of the number of inseminations would not indicate the number of live births. A Canadian survey undertaken by Health and Welfare Canada, which surveyed 11 of 18 health science centres, estimates a total of 1 519 births through DI.¹⁰ Newspaper reports, citing DI physicians, vary in estimates from 1 000 to 6 000 births per year.¹¹ A 1987 U.S. survey estimates 30 000 births from DI in 1986.¹²

Approximately 10-15 percent of Canadian couples are infertile, and it is estimated that about one-third of this number is due solely to the male partner.¹³ The demand for DI can be expected to increase in the future because of increased publicity about the procedure, the current prevalence of male infertility, the decline in availability of children for adoption, progress in detecting hereditary disease, and an increase in men wanting to store their sperm owing to vasectomies or radiation treatments. In addition, current social trends indicate the potential for an increase in the number of women (heterosexual and lesbian) choosing to rear children without a male partner.

DI is the oldest, least visible, and most widespread of what are termed assisted reproductive technologies. With the exception of contract motherhood, which is, as popularly understood, a version of artificial insemination, all of the technologies are quite different from DI since they involve more technically sophisticated, invasive, and expensive medical procedures. DI is grouped with these technologies because the practice came to public attention through the development of these more socially visible techniques.

DI has a surprisingly long history in medical practice.¹⁴ The first recorded instance occurred in 1884 when a Philadelphia physician inseminated an anaesthetized woman with the sperm of the "best looking member of the class" of medical students. When the woman became pregnant, her husband was informed of the insemination by the physician, and he, fortunately for the physician, was pleased. His wife was never informed. The incident was not reported until 1909 when Addison Davis Hard, presumably the "best looking member of the class," wrote an article for *Medical World* publicizing the event and triggering a debate about the ethics of the incident.¹⁵ Despite its existence for over a century, little is known about the history or prevalence of the procedure.

Prominent among the social implications of DI, when practised in clinical settings, is the movement of conception from the private to the public realm. DI alters a seemingly immutable fact of social life — that a man and a woman known to each other must unite physically to achieve conception. Conception achieved through private sexual congress is not immune to attempts at social regulation or social control. However, the movement from the private to the public realm, in this case to the practice of medicine, is accompanied by a new level of social responsibility and social regulation. Included among these issues are the selection and screening of donors and the question of access to DI services. Physicians,

in other words, are granted the rather onerous task of deciding who may become parents. In this respect, DI is similar to the practice of adoption, which is regulated by social service agencies. Physicians, however, particularly infertility specialists, are not trained to assess the capacity of individuals to become parents.¹⁶ Although physicians may act as gatekeepers governing eligibility criteria of recipients and selection of donors, the actual "matching" of recipients and available donors may be decided by other medical personnel such as nurses, technicians, or secretaries.

The anonymity *between* procreative partners as facilitated by DI is an unprecedented social act. If the procedure is successful and a child is conceived, it is additionally the task¹⁷ of physicians to keep accurate records linking the biological father, biological mother, and their offspring. These may be required for medical reasons if genetic abnormalities are later discovered either in the offspring or the donor. It is also the only method of monitoring the number of children fathered by a single donor. As well, similar to the situation prevalent in current adoption practice, biologically linked individuals may wish to acquire information about each other for social reasons. As discussed in the study, however, accurate medical records are not always kept.¹⁸ When this is the case, it would be impossible for offspring, for example, to gain information about their biological father. This situation is further complicated by the agreement at the time of insemination (typical of current practice) that the sperm donor's identity remain anonymous. If frozen, the sperm may have originated at some distance and time from conception, altering traditional geographical and temporal boundaries of human reproduction. Given so many alterations in the circumstances surrounding conception, it is clear that this may be "a revolution in the reproductive process," one which has decidedly social implications.

Structure and Approach of the Study

This paper describes an exploratory, qualitative study of DI participants. It provides a conceptual map of relatively uncharted social terrain, elucidating the experience of DI participants and illuminating deeply embedded beliefs concerning biological ties, parental roles, and family structure. The study is based on data collected from various DI participants, including DI mothers (married, single, and lesbian), DI mothers' partners, sperm donors, and DI offspring.¹⁹

The initial focus of the study, which guided the interview/questionnaire structure, was the impact of DI on family structure. During the process of data collection and initial review, however, a striking theme emerged. The recurring theme identified concerned the social meanings attached to biological ties, which suggested that the defining feature of biological facts within a social context are the beliefs held about them.

Respondents voiced a broad spectrum of responses pertaining to biological ties; these emerged not in reply to a single question, but as a repeated motif. On the one hand, for example, biological ties were considered "irrelevant." DI was described as if it were an "allergy shot" or, more frequently, it was equated with blood donation. On the other hand, biological ties were considered a significant component of identity and carried substantial cultural meaning. For example, biological parents were described as "real," "true," or "natural." These seemingly contradictory views were conceptualized as poles of a continuum in tension, with acknowledgment of the social significance of biological ties at one end and denial of that significance at the other.²⁰ The "voices" of acknowledgment and denial were not necessarily those of different respondents — rather, respondents often expressed both views, but at different points in the interview or questionnaire and in response to different issues.

The defining *social* features of DI practice — anonymity and secrecy — testify to the social significance attached to biological ties. To a large extent, the respondents' expressions reflected attempts to "normalize" DI families to the nuclear, blood-tied model. If biological ties were considered irrelevant, secrecy about the procedure and donor anonymity would be unnecessary. DI would not require the mediation, distance, and privacy provided by a physician.

This study contends that the seemingly distinct voices of denial and acknowledgment are grounded in an assumption that biologically linked individuals are bound to each other by legal rights, by responsibilities, and potentially by issues of identity. Participants in DI are social innovators in family forms. They are not, however, necessarily social reformers. The dissonance voiced by respondents concerning the meaning of biological ties is indicative of cultural confusion and uncertainty in comprehending and resolving the social consequences of DI, particularly in relation to parental roles. Quotations from respondents are employed to illustrate the sociological dimensions of the issue. The recurrence of the identified theme — denial versus acknowledgment — indicates the issue is not an isolated or individual dilemma; rather, it reflects a shared social condition.

Methodology

Qualitative research aims to identify themes, trends, and patterns. The descriptive array rather than the numerical distribution of responses to a particular subject or experience is sought. This qualitative study of DI participants was undertaken to learn as much as possible about this little-studied family form. The study is characterized by a flexible research design and an openness regarding the direction of analysis.

DI participants are difficult to identify and contact, because neither the population nor the universe relevant to the study is known or

knowable. There is no list of DI participants available in Canada, and the incidence of DI outside clinical settings is also unknown. An availability-sampling technique (described below) was used to contact respondents. Doctoral research data were collected from 50 respondents during one year in the mid-1980s. Since that time, data have been collected from an additional 22 respondents.

The total sample included 72 respondents: 15 donors, 35 DI mothers (18 married at the time of insemination, nine in a lesbian relationship, four single, and four partners of lesbian DI mothers), eight adult offspring, seven social fathers, one older sibling of a DI child, two parents of a donor, and four physicians. It was not possible to achieve a more equitable distribution of respondents in various roles. Nonetheless, common themes emerge in the data analysis.

DI mothers were the easiest to contact and most eager to speak about their experience. Husbands of DI mothers were extremely difficult to contact; only with concerted effort were seven included in the sample. This is regarded as an important research finding in itself, indicating the degree of difficulty involved in obtaining first-hand information about male infertility. Respondents were contacted through personal references (friends and colleagues) and advertisements in the print and broadcast media.

The sample is self-selected, introducing a bias into the data collected. Exactly how self-selection affects the data is unknown. Some insight into respondents' reasons for participating in the study was gained during data collection, although such information was not actively solicited. Reasons included an expressed need to talk about the DI experience, curiosity about the concerns of other DI participants, and a desire to assist with the research.

Data were collected through anonymous telephone interviews, mailed questionnaires, and personal interviews, depending upon the respondents' preference, geographical location, and the economic restraints of the study. Anonymity was an important condition of participation for most respondents. Pseudonyms were used unless participants wished to be identified in the final report. The questionnaire and interview guide are included in Appendix 1.

The study began with the question, "What is the impact of DI on family structure?" The questionnaire and interview guides were designed to explore this issue for all participants. The social meaning of biological ties was chosen as an analytical theme because it emerged consistently and visibly as a puzzling issue for respondents. The issue of biological ties also appeared as the most comprehensive conceptual tool for organizing the data, although other sub-themes were included in the analysis. The following three parts of this paper — Anonymity, Secrecy, and Redefining Parenthood — demonstrate the persistence of biological ties as relationships that constitute significant social bonds.

Anonymity

Preserving anonymity between the recipient(s) and the sperm donor is considered an essential feature of DI practice. The medical, legal, and sociological literature concur on this issue, and it is frequently argued that the very success of DI depends on maintaining such anonymity. Frequently cited as problematic is the potential for future legal difficulties (in particular, contested paternity claims) if DI participants should meet, and also the heightened risk of emotional complications for DI participants and offspring.

To neither know nor choose one's procreative partner reflects a momentous shift in reproductive relations — historically, a socially unprecedented act. The importance of anonymity as an integral feature of DI testifies to the strength of the cultural norm that parenthood within the traditional family structure is constituted by biological ties. If biological ties were not considered fundamental to parental roles and responsibilities, the donor's role would not require such protection and distance, mediated (in clinical settings) by physicians. If biological ties were not significant, why wouldn't women borrow sperm from a neighbour or friend as easily as the proverbial cup of sugar?

The data analysis reflects a dissonance concerning the norm of parenthood as constituted by blood ties. This dissonance is conceptualized as poles of a continuum in tension, with acknowledgment of the blood tie at one end and denial of this tie at the other end. Denial and acknowledgment are frequently voiced by the same respondent. These sentiments are grounded in the commonly assumed social significance of the blood tie as a relationship in which individuals have legal rights and responsibilities to each other. The emotional difficulties that might arise if recipients and donors knew each other are a result of this cultural assumption upon which legislation is built.

Married DI Mothers

Married DI mothers depart from traditional roles by conceiving a child with sperm from a man who is not their husband and who is unknown to them. The strongest voice of denial came from women who accepted the medical definition of DI. Dorothy commented: "It was just a little vial of semen, that was it. I don't even visualize a donor ... It was simply a medical solution to a medical problem." Others commented that it was "just a vial of sperm" or "no different from blood or urine samples." Several mothers described DI as a "means to an end." Given cultural emphasis on technological solutions to social problems, the prevalence of the means-to-an-end response is not surprising. The technological-fix mentality provides a common, culturally supported conceptual framework for eliminating or suppressing concerns about the donor. A "vial of semen," unlike a person, has neither legal nor social rights and responsibilities. Most importantly,

semen cannot "change its mind" about future claims of rights and responsibilities. The threat of the donor's potential rights to the child is exacerbated by the absence of legislation protecting donors or recipients.

The medicalization of DI facilitates the view that the procedure has no greater social implication than an allergy shot or a blood donation; however, several DI mothers said that the medical aspect of DI was the "worst part," extremely stressful and impersonal. If pregnancy was not achieved within a few months, the pressure and stress were described as intolerable. Several women commented that they feared stress would interfere with their ability to conceive; however, they didn't consider the alternative of "doing it yourself." Once a problem is defined as a medical problem, a medical solution is sought. The medical route puts distance between the donor and recipient. The importance of such distance is confirmed through the sustained choice of a medical route despite the reported stress of impersonality and scheduling problems.

Several respondents revealed their denial of the donor's role through an expressed lack of feeling about him. For example, one respondent said, "I feel nothing about the donor and I have no interest in him, ever ... It was simply the pairing of A and B." Generally, respondents did not want to meet the donor. One person, an exception, said she "would very much like to" meet the donor, but she expressed concerns about hurting her husband or interfering with the child's relationship with his father. She commented:

I would like to have known more, and I would even like to have met the person, but I suppose, in a way, it's protection, because you can't conjure up anything in your mind of that person — you'd think of the donor as your husband. Because if you haven't met the person, then that person is non-existent.

Several respondents trusted the physician to choose and screen a "good" donor and respondents often didn't know whether the physician kept records linking donors and recipients.

Interest in the donor generally was limited to matching physical characteristics in order to simulate the blood tie to the partner. Mothers with more than one DI child preferred to have the same donor for all DI children. Usually, this was not possible, because no records were kept that linked recipients, donors, and offspring. The importance of physical resemblance of children to parents and of siblings to each other appeared in the data as an important component of the norm of blood-tied family relations.

In expressing gratitude toward the donor and curiosity about his life, respondents acknowledged the social implications of the blood tie in an indirect, limited fashion. Frequently, such acknowledgment was intermingled with denial of the importance of blood ties. One DI mother commented,

I look at my boys and I think, some guy is out there not seeing these two beautiful kids ... It's kind of sad, really, that someone who has a part in all this doesn't know them and never will.

Later she comments:

As far as I'm concerned the donor has no rights at all ... no, I am not curious. I made up my mind ... and I guess once in while I thought, well, how could he? Does he ever wonder?

Acknowledgment of the donor's role usually was expressed as gratitude and was linked to curiosity about him and how he coped with his role. One respondent who rejected DI commented,

There was not enough discussion about who the donors were ... the doctor didn't tell us anything ... What drove me nuts was I was giving another person, the doctor, complete control over choosing the father of my child.

Comments suggested, therefore, that research on individuals who reject DI might provide a different perspective on this issue.

One DI mother reported extreme distress about the dilemma of whether to tell her three-year-old daughter of her DI origins. Acknowledging her daughter's conception as more than a medical treatment made it impossible for her to deny the social significance of the blood tie between her daughter and the donor:

It had been something that has been very painful to work through ... If you decide to tell them the question is when ... because can that child go to school and say that she is an AID baby and not be different from her peers? ... Somebody had bought us a book that has, you know, a baby's first lock and your baby's first [step] and all this, and on one page there were family trees. I thought, what am I supposed to fill in on this? I am supposed to fill in my husband's family tree. I suppose I am, but that has a lot to do with genetic inheritance and I couldn't do it because, again, I was feeling we were living a lie ... or I felt like we were supposed to go home and pretend that this never happened, and you can't do that.

One respondent who conceived with a known donor reported problems with the donor. The respondent and her husband had come to terms with the arrangement; however, the donor wanted more involvement with the family than was initially agreed. The occurrence of such conflict appears to expose — that is, to make explicit — the culture-bound reasons for anonymity.

Single DI Mothers

The single DI mother differs from DI mothers with male partners in that her reasons for choosing DI do not include protecting her partner from the stigma of infertility. In this respect, she could be seen as "freer" to choose a procreative partner. Nevertheless, the importance of anonymity again was illustrated by the amount of energy and stress undergone to

achieve DI pregnancy. These respondents gained access to DI services; however, their experience indicated that single women were more likely to encounter access problems. Single respondents undergoing DI were questioned by physicians about their economic stability; married DI mothers did not report such questioning by physicians.

Generally, respondents were satisfied with the amount of donor information provided and emphatically stated they had no curiosity about him. Still, Karen said, "It was as much fun not to know" the donor, but added, "It crosses my mind from time to time that my son could somehow meet and marry his half-sister." Comments about gratitude to the donor were also conflicting: for example, "I am thankful there are people that donate ... I don't think a donor has a concept of a baby being the end result, because if they did ... they couldn't donate." Interest in the donor was limited to gratitude, wanting to know the medical history, and an interest in matching physical characteristics to the mother's own physical appearance.

None of the single DI mothers contacted asked their doctors about record-keeping practices, which highlights the acknowledgment-versus-denial dynamic. Avoidance of this issue may facilitate denial; however, single DI mothers can't conceal DI as easily as DI mothers with male partners. A single DI mother eventually must handle her child's questions about his or her origins. (All of the single DI mothers contacted intended to tell their children the truth about their origins.) Despite these obvious differences from DI mothers with male partners, single DI mothers adopted many similar assumptions about the need for anonymity.

Lesbian DI Mothers

Lesbian women who choose to have children through DI construct families visibly different from that of the heterosexual nuclear family. The separation of reproduction from sexual intercourse through DI circumvents the problem of heterosexual contact to achieve pregnancy. The visibility of lesbian couples as an alternative form of family often is directly related to their expressed reasons for using anonymous donors.

Most lesbian mothers in this sample chose anonymous donors. In addition, they chose clinical settings in which to achieve pregnancy, despite lesbians' reported difficulties in gaining access to DI services. Respondents' overriding reason for choosing an anonymous donor was fear of legal claim to the child by a known donor. Lesbian mothers are particularly vulnerable to custody suits based on societal notions of who is a "proper" mother.²¹ This fosters an acute awareness of legal process among lesbian participants in DI.

The law embodies the social assumption of biological ties as the social bonds from which legal rights and responsibilities ensue. For most respondents in this sample, acknowledgment of the donor's legal rights did not lead to acknowledgment of the underlying assumption of the law: that

blood ties are regarded as equivalent to familial bonds. Respondents generally perceived the problem as the law itself and dismissed the social meanings attributed to blood ties.

Respondents also employed the medical paradigm to facilitate denial, commenting, "It's not a stranger, it's semen." Interest in and feelings about donors were limited to matching physical characteristics to their own or their partner's physical appearance. Some respondents expressed interest in donors' medical histories or particular talents; however, they did not question the physician about these issues.

Only one respondent stated that an anonymous donor could present difficulties for her child, acknowledging the social context in which blood ties carry familial meanings: "It's an unknown the child will have to deal with all its life, and that is a big thing. I don't try to minimize that to myself, that that's a heavy thing to go through life with in a world where everyone wants to know 'who are your parents?'" Another lesbian couple chose a known donor, the brother of the co-mother. The co-mother commented on this choice: "I also wanted to have a biological tie myself, and this was the only condition under which I would agree to have a child. An unknown donor was unthinkable to me — a horrible idea."

DI Fathers

The role of the DI father departs from that of the nuclear-family model in that he consents to his wife conceiving a child with sperm from an unknown man. He is the (social) father to a child not biologically linked to him. Only seven DI fathers were willing to be included in the study, indicating a reticence to speak about their experience. This reticence reflects both the social and emotional difficulties of their role.

Whether using DI because of a low sperm count, inability to ejaculate (a quadriplegic male), or a vasectomy, all respondents expressed a lack of interest in the donor's identity. "It's the last thing in the world you'd want to know about," commented one DI father. Another was clear that he didn't want donor information because "the more information given, the less I can pretend the baby is mine." Despite a lack of interest in the donor's identity, one respondent had feelings and questions about donors in general: "Why do they do it? Do they think about the kids? I just wonder how can any man donate sperm."

Infertility does not affect an individual's ability to be a social parent; however, several medical studies suggest a pattern of impotence among men following the diagnosis of infertility.²² Thus, a lack of interest in the donor's identity by husbands of DI mothers can be understood as a response to the cultural links between fertility and masculinity, or infertility and impotence.

Offspring

The anonymity of the biological father becomes an issue only for those DI offspring who know about their method of conception. All eight adult offspring in this study knew about their DI origins owing to a family crisis — death or divorce. Some respondents regarded knowledge of their biological origins as fundamental to their identity. As one DI offspring put it, “I don’t know but one half of me.” She regarded exploration of her unknown biological heritage as a necessary route toward self-knowledge.

Interest in knowing about their biological fathers varied among respondents from “nothing” to “everything.” One adult offspring had a “strong suspicion” that his biological father was his mother’s “shrink,” who also was a family friend. Another was certain that her biological father was her mother’s then-doctor: “He’s Irish Catholic ... he looks exactly like me.”

Donors

The anonymous sperm donor is the procreative partner of a woman (or possibly several women) whom he neither chooses nor meets. The donor’s role exists within a social context that is ambiguous about male reproductive responsibility and undergoing transformation regarding the father’s role in child-rearing. Unlike biological fathers who shirk parental responsibilities, donors cannot be characterized as irresponsible. Rather, they donate sperm to assist women or couples who take full responsibility for the offspring. Since a donor’s role is mediated by the medical profession, it is socially (but not necessarily publicly) sanctioned. Thus, the cultural image of the donor rests somewhere between that of the altruistic blood donor and the irresponsible sailor with a “family in every port.” Little is known about donors’ feelings and attitudes that could assist in clarifying their social role. Discussions about sperm donors in the medical literature are dominated by discussions of criteria for screening and selection of physiologically healthy donors.²³

Most respondents donated sperm anonymously through a hospital clinic or a private medical practice. Generally, donors felt that anonymity was very important. As one donor commented, “I would never donate for a friend.” In contrast, one respondent who had donated to known recipients felt that “the recipient, donor, and their families should all meet. The donor should be a friend of the recipient; however, the donor must have no hand in raising the child nor any responsibility.” Anonymous donors in this study expressed no interest in knowing the recipient’s identity or marital status; however, several expressed sympathy for the unknown DI mother or couple.

A common belief among donors was that the offspring would be much desired and well cared for, because recipients were willing to undergo artificial insemination and/or could afford the medical cost not covered by provincial health insurance plans. From the donor’s perspective, medicalization of DI provided additional comfort that their sperm would be

used responsibly. This implicit understanding was similar to the trust placed by DI mothers in the physician's ability to choose a good donor.

Donors contacted for this study donated for various reasons: payment was a stated motive, but generally not of singular or paramount importance. Some donors reported altruistic motives, and two additional themes emerged. The first was a reproductive impulse, which was distinct from the desire to parent. Second was the idea that donating sperm was a sexual experience, but the sexual aspect soon wore off as respondents experienced the clinical, medical, and impersonal nature of DI. Donors often spoke at length about the unpleasant process of donating.

Several respondents claimed that sperm donation was the same as blood donation, particularly related to the issue of anonymity. Comments about the procedure, however, such as "it was a bit too mechanical" and "it was too clinical and too back-street," indicated that sperm donation was indeed distinct from blood donation. The image of a blood-donor clinic, for which there is open, public solicitation and acknowledged altruism, is clearly different from the clandestine practice of sperm donation.

Secrecy

Unlike other new reproductive technologies, DI has been shrouded in secrecy for more than a century. In contrast, the 1978 birth of Louise Brown, the first baby conceived through *in vitro* fertilization (IVF), received international news coverage. Other new reproductive technologies (such as contract motherhood) also receive public attention, with participants' names generally published. For DI, however, there has been "an implicit and unquestioned assumption that secrecy is necessary and beneficial."²⁴ Consequently, DI has only recently begun to emerge from its cloak of secrecy, largely as a result of increased public attention to other new reproductive technologies. Current professional guidelines for DI are only beginning to question the benefits of secrecy. For example, a recent U.S. report noted "there is a lack of information about whether secrecy is better for the child."²⁵

Married DI Mothers

Married mothers gave varied responses on the issue of secrecy about the origins of their DI children. In general, they either favoured keeping the origins of their DI child(ren) secret or preferred openness. When the responses were examined, however, they did not fall neatly into these two categories. Rather, the responses varied on a continuum from "telling no one" to "everyone knows," with selective secrecy and openness (telling best friends and/or select family members) in between.

In addition, the expressed attitude toward secrecy was not always in line with a respondent's behaviour. Several respondents who were open

about their use of DI actually preferred secrecy. For these respondents, special circumstances rather than preferences dictated their openness, illustrating that secrecy is possible and practical only under certain conditions. For example, an initial secrecy agreement may be strained or broken during family crises. Given the potential impact of changing circumstances on whether secrecy is maintained, this study provides only a "snapshot" of respondents' attitudes or behaviour at one point in time. Unlike donor anonymity, secrecy is a more changeable feature of DI. The age of children also affects attitudes about secrecy: the older the DI children become, the more likely it is that life events will occur that make secrecy impossible.

Respondents favouring secrecy about DI expressed relief at being able to "talk to someone after all these years." For these respondents, one of the greatest burdens of secrecy was their isolation from others in their situation. DI mothers consistently reported that they never discussed the origins of their DI children with their husbands. They also were adamant that their husbands would not participate in this study and would be upset if they knew of their wives' participation. Their stated reasons for secrecy included being counselled by the physician to do so, and fear of public condemnation, hurting the child, or hurting the husband. Protecting the husband from the stigma of infertility was, however, only one stated reason for secrecy.

Respondents also attempted to shield their husbands from reminders that the children were not genetically linked to them. As one woman noted, telling would "just cause pain and unanswered questions. It would hurt my husband ... he thinks of her as being his, and who is to say she is not?" There also was concern that the child would "feel different" and/or be treated differently by other family members. Some respondents saw themselves as protecting the child from the assumption that their (social) father was not their "real" father. Josie commented that "it would be a threat to [the children's] security." Another DI mother explained the need for secrecy as follows:

I guess I felt a need for it because I didn't want him to feel different ... because I have a step-daughter that I am close to and I didn't know how she would react. I didn't know how the rest of the family would react, and I didn't want to take the chance of anybody reacting peculiarly to Jonathan ... I felt that it was a protection and, really, ... why did they have to know?

Of the married DI mothers who were open about their children's DI origins, several would have preferred secrecy. These women stated that changed circumstances resulted in their sharing information with family members and friends. For those who chose openness, their stated reasons included an emotional need for openness, the fact that family or friends already knew of the husband's infertility, the impossibility of secrecy owing to unforeseen circumstances, the feeling that it was "part of the child's

history," and a wish to reassure the children that they would not pass on the hereditary medical problems of their social fathers.

After one unsuccessful insemination, Janice summarized her objections to DI in terms of the problems posed by secrecy:

The hospital said they could guarantee secrecy ... but, it's hard to keep a secret ... it's not that simple ... there's the whole question as the children get older ... we couldn't keep it from them ... Our son [adopted] may see his birth parents when he grows up. We know a lot about his background. It's very different from not knowing anything ... you should have lots of information to pass on to the child. I think the secrecy with DI is scary. We're not hiding anything with adoption.

Janice rejected DI because of the permanence of donor anonymity and because she could foresee problems with both openness and secrecy. Like another respondent, she compared DI and adoption, where openness about the child's origins could accompany information about his or her biological parentage.

Respondent Tania was extremely distressed about secrecy, with resulting emotional upheavals and marital problems. One of her major concerns was the isolation secrecy engendered:

One of the hard things about having done this was not knowing anybody else in the same situation to talk with and to discuss certain matters that arise with us ... You can't talk to other friends or anybody, really ... I mean, you feel so terribly isolated.

Berger²⁶ suggested that the decision to use DI involves two often-merged stages: resolution of the issue of the husband's infertility and that of the DI itself. Secrecy, Berger argued, may contribute to the "blurring of two separate tasks." Consequently, he suggested a lapse of three to four months between the diagnosis of infertility and DI. He concluded that openness might prove psychologically beneficial.²⁷

If DI participants decide to adhere to secrecy initially and change their minds over time, telling people becomes more problematic. Tania commented,

I think there should be openness in the beginning. It is terribly difficult the longer it goes on ... I never realized it would be like this when we did it.

and,

Our household is a lot more relaxed since we've openly acknowledged it ... the "secret" is a psychologically dangerous way to counsel a couple ... it produced negative feelings of shame and guilt, and why not? It must be a terrible thing we did if we're not supposed to ever tell anyone.

Single DI Mothers

The single women included in this study were open about their use of DI. The absence of a male partner required some explanation to friends

and family about their offspring's origins. For these respondents, secrecy was not an option. Rather, openness legitimized the procedure, counteracting any potential stigma attached to unplanned pregnancies or children conceived through a "one-night stand."

Lesbian DI Mothers

Lesbian respondents also were open about their children's DI origins. Family members (usually selected), friends, and sometimes co-workers were told of the mode of conception. As well, the children (depending upon their ages) already had been prepared for and told their conception story, or they were to be told in future. The only component of secrecy for some lesbian DI mothers was a commitment to secrecy about the physician who inseminated them. In some cases, the inseminating physician recommended that the mode of conception be concealed from the obstetrician or family practitioner monitoring the pregnancy and birth.

Lesbian mothers confront a potentially double stigma when they conceive a DI child. Whether single or with a partner, lesbian mothers violate traditional "family" norms in which married heterosexual couples conceive. In the case of lesbian mothers, both their sexual preference and the mode of conception challenge the conventional family image.

Respondents described mixed responses from family members to the knowledge of DI. Since parents and family members of lesbian DI mothers were asked to accept a non-traditional family unit, it was not surprising that some initial resistance was encountered. Despite disapproval of the lesbian relationship and/or the method of conception, most respondents reported that most family members overcame their initial resistance once the child was born. Lori commented on her mother's response: "While she disapproves heartily of the relationship between us, she approves heartily of the child and has a difficult time separating them."

The open attitudes adopted toward DI by lesbian (and single) women in this study stand in contrast to the secrecy generally encouraged by DI practitioners. Although problematic for some family members, openness also provided respondents with family support. Said one respondent: "I'm not big on secrecy; in general, secrets put barriers between people. I've told all my friends because I wanted support, and that support is very important to me."

All lesbian DI mothers and partners contacted intended to tell (or had told) their child(ren) about the mode of conception. All lesbian respondents emphasized the importance of "honesty" and "the truth," and commented that they perceived secrecy negatively. As one lesbian DI mother commented: "If I didn't tell her, I would be so afraid they would stumble on that information ... some crisis ... and it would come out in the worst possible way." There was no consensus, however, on the question of when or at what age the child should be told of his or her DI origins.

DI Fathers

Maintaining secrecy was important to Jack, but not to disguise his infertility. He said he valued secrecy so he would feel the children were fully his own and to protect the children from confusion or distress that might arise from knowing about their DI origins. "I don't think even once have I thought ... 'that isn't my true son or sons' ... I see no reason for the children to be told ... There might be some disturbing effect on them to be told sometime down the road that, really, I'm not their true father." The dissonance resulting from being his children's (social) father but not, in Jack's words, their "true" (biological) father is explicit in Jack's reason for secrecy. Secrecy helps to resolve this dissonance but doesn't eliminate it. Jack's stated reason for choosing DI over adoption "was that at least one of us would be the *real* parent of the children."

One respondent had been open about his child's DI origins and later felt this might have been a mistake. Family members had responded positively; however, some of the child's peers perceived the non-biological tie to her father as a stigma. The respondent commented, "People are not really that thoughtful or sensitive ... It's none of their business."

One Hindu DI father reported DI as extremely stressful. DI violated many of his religious beliefs, including a prohibition on masturbation, which was necessary to produce the sperm sample for testing. The issue of telling family members and the child also was reported as problematic. Asked if anyone in his family knew about the DI, Namir responded:

We haven't told anyone yet ... We will break the news to them eventually. I think I will. I'm building up enough courage ... I don't know how they will respond, but they will be surprised ... Part of the stress is not knowing how our family is going to react.

Offspring

Research on adopted children indicates that children cope best when told early by their adoptive parents about their biological parentage.²⁸ Current adoption practices reflect this philosophy. Despite the differences between adoption and DI, adoption provides the only social precedent for DI. Current DI practice, however, assumes that the child's origins can and should be kept secret. The adult DI offspring in this study all learned of their DI origins in early adolescence or in adulthood.

Brandon²⁹ suggested that it might not always be possible to keep DI secret, and that the secret might be exposed during parent-child conflicts. Indeed, Candace and her brother Tim learned of their DI origins in this way. Both described feeling "relieved" to know about their DI origins. Tim felt "good about it," and his curiosity about his biological father was mild; however, Candace sought more knowledge about and wanted to meet her biological father. She publicly acknowledged her DI origins and founded a DI participants' self-help organization directed at changing DI practices and

assisting others in her position. This work constituted a major part of her life and testifies to the impact of her DI origins. She viewed secrecy as a particularly negative component of current DI practice, commenting that "50 percent of the problems with DI would be solved if the secrecy issue was taken away."

Suzanne, another public activist for DI participants, described her reaction to learning about her DI origins as "shock" and "great sadness." She also stated that she felt "deep satisfaction ... in knowing something isn't right and having my suspicions confirmed and finding the truth." Expressing clearly negative feelings about the secrecy surrounding DI, she added, "I feel that I was cruelly deceived."

Several respondents reported that they "knew something was wrong" before they learned of their DI origins. Ostrom observed that this may be seen as a common phase of development, yet argued that DI provides a framework for "assimilating subtle clues of truth."³⁰ Concern and apprehension about origins may be part of normal childhood development; however, the expression of these concerns by an uninformed DI child may trigger parental responses that deepen the sense of "something wrong."

Two brothers responded differently to the knowledge of their DI origins. Martin adjusted to the information with little apparent upheaval; however, his brother had persistent difficulty with it. The question of why two offspring in the same family respond differently to their DI origins is undoubtedly part of the complex family dynamics of which DI is part. Physical resemblance is seen as important in providing the appearance of biological linkage and may be a factor in how well individuals adjust to information about DI origins. Martin reported that he became suspicious about his origins during his Grade 10 biology studies of genetics. "I knew something was wrong based on my eye colour ... my mother was nervous at this time." Ross, who was told of his DI origins when he was 14 years old, commented that adolescence may be a particularly vulnerable time to be informed about DI. He felt that he would have accepted the information more easily if he "had been told earlier."

It would be difficult if not impossible to separate the impact of DI from other family dynamics (even with a large sample with controlled variables.) All adult offspring in this study described stressful events or family difficulties that they relate in some way to DI. In a sample of this size, it may be concluded only that, when combined with unstable and unforeseeable family relations, DI exacerbates existing tensions and conflicts.

Donors

The extent to which sperm donors publicly acknowledge their role or maintain secrecy indicates their own feelings about their role and the response they anticipate. Donors who had not told their families about their donations responded similarly when asked for the reasons for secrecy.

They all stated that their families would not approve and would suggest they “settle down” and have their own children. Some did not tell family members because they thought they might express an interest in the DI children.

Those who had told their families generally received support, and the family often compared the procedure to blood donation. The parents of one donor were interviewed and were completely supportive of the procedure. The donor’s mother emphatically did not regard the (potential) offspring as grandchildren, while his father expressed mild curiosity about his son’s DI offspring.

The partners or girlfriends of donors offered varied responses. Some donors met with support, some with indifference. One donor felt his sperm donations may have had a role in his “splitting up” with his partner, and another was afraid to tell his partner. Overall, data suggest it is easier to tell individuals who are not biologically linked. Like the DI mothers in this study, donors demonstrated loyalty to the physician or clinic where they donated and generally were unwilling to identify them.

Redefining Parenthood

The traditional nuclear family is constituted by two distinct types of bonds — marital or affinal bonds and biological or blood ties. The marital bond is contractual and therefore voluntary and terminable. Biological or blood ties are non-contractual, involuntary, and culturally perceived as permanent. The enduring character of blood ties is a powerful cultural construct from which many implicit social meanings are derived. The social meanings derived from blood ties are often taken for granted and not recognized as cultural constructs. “It is culturally defined as being an objective fact of nature, of fundamental significance and capable of having profound effects, and its nature cannot be terminated or changed.”³¹

The cultural norm of parenthood assumes that an individual undertakes both biological and social roles. When these roles are severed, deviation from the cultural norm is reflected in additional descriptors to the parental roles. In the case of adoption, biological parents are known as birth parents and social parents are the adoptive parents. A stigma is attached to non-biological parental roles. As Kirk pointed out, “adoptive kinship is not and cannot be the equivalent of blood relationship.”³²

DI severs the relationship between biological and social fatherhood. In this sense, DI participants are social innovators in family forms. DI mothers conform to cultural norms of parenthood, since they maintain the link between biological and social parenthood; however, the roles of the DI mother’s male or female partner, the donor, and the offspring must acquire new definitions. Successful adjustment to DI requires clarification and

identification of the distinct roles, including the rights and the responsibilities, of biological and social paternity.

The diversity of current family forms, including DI-created families, necessitates clarification and redefinition of parental roles.³³ These families' health depends, among other things, upon the development of a vocabulary to describe their unique identities as viable family forms. The persistence of the traditional nuclear, biologically linked family as a normative model undermines this process. The confusion and uncertainty about new DI-created roles is evident in the language used by participants to describe their experiences.

Married DI Mothers

When questioned about their definition of parenthood, the married DI mothers in this study consistently emphasized the social or child-rearing aspects and minimized the biological function. For example, Tania commented, "to me, your real mother and father are the people who raise you ... that make sacrifices for you ... that are there for you ... that's your real mother and father ... What we are talking about is a biological difference." However, when asked why they chose DI instead of, for example, adoption, they acknowledged the importance of the biological tie. Josie, who previously commented that parenthood "isn't biological," responded that DI was "better than adopting ... at least I get to be a mother."

Married DI mothers also consistently reported the importance of bearing their own children and experiencing pregnancy. Josie described the decision-making process for infertile couples. A child biologically linked to the couple is a "first choice." DI is the next choice, since it maintains the genetic link to the mother and affords the experience of pregnancy. Farris and Garrison referred to this as "emotional unification," provided by both the pregnancy experience and the DI mother's genetic link to the child.³⁴ Overall, married DI mothers minimized the importance of the paternal biological tie.

The study reflected a dissonance in married DI mothers' definition of parenthood. Questioned explicitly, these women defined parenthood in social terms; however, DI was chosen, at least in part, to ensure a biological link to the child. The minimal, socially invisible role of the biological father facilitated denial of its significance. The paternal biological tie was acknowledged only when distance from the social father was desired. For example, one DI mother's husband was institutionalized owing to mental illness, and, when her son asked questions about his father, she responded, "he isn't your real father." Another DI mother in the process of a divorce commented, "he's not her father, and I can prove he's not. I still have my bills ... the dates ... everything."

Single DI Mothers

Single DI mothers in this study responded much like married DI mothers regarding their definition of parenthood, emphasizing its social or nurturing aspect and minimizing the biological tie. Single DI mothers conform to traditional parental roles in fulfilling the biological and social aspects. Their departure from tradition occurs through their status as single parents. As single DI mothers noted, divergence from the two-parent, heterosexual cultural norm poses difficulties for adoption. One respondent mentioned the need to have her "own" child and experience pregnancy.

Several respondents mentioned the importance of the donor's role as a biological parent. Debbie identified with the donor and acknowledged that the biological tie to a child is so strong that she could never be an egg donor. "I don't see the donor as a father ... I don't think the donor has a concept of a baby being the end result ... because if they did ... they couldn't donate ... it would be too frustrating. I couldn't be a donor. I couldn't even do ... egg donation." In the case of a single DI mother, the absence of a male partner to assume the social father's role facilitates acknowledgment of the donor's role.

Lesbian DI Mothers

Lesbian couples who have DI children represent the most radical shift from the traditional nuclear family. The difference, however, is simply one of sex since they conform to the image of a two-parent family model — even though both parents are female. In this study, lesbian DI mothers also reported that parenthood is primarily a social, not a biological, endeavour.

The preference for heterosexual couples in current adoption practice precludes this option for lesbian mothers; therefore, most respondents anticipated difficulties with adoption. As well, some lesbian DI mothers wanted to bear their own children. Linda, for example, comments: "It's near impossible for lesbians (especially lower-middle class) to adopt ... also I wanted to experience pregnancy and birth for myself."

All lesbian respondents with partners expressed concern over the absence of a legal tie between the child and the co-mother. Several couples had contracts protecting the rights of the co-mother, despite an awareness that these were not legally binding.

For example, Margaret and Lori had grappled with the legal issues:

We attempted to have Lori adopt Allen. Then she would become legal guardian ... We have been thwarted ... There is no precedent for it in the Canadian legal system ... everything in the book says "the man." The only way Lori could become legal guardian was to give up my legal status ... we could draw up an agreement between us which would not stand up in court.

One co-mother commented that the biological tie through the donor (her brother) was especially important, given her absence of legal rights.

Respondents also mentioned other legal complications, such as that the co-mother's employment benefits could not be used for the child.

In the case of partners of DI mothers, whether they are male or female, the definition of "parent" requires change. That DI may facilitate diverse family structures is most visible in the case of lesbian couples. Among lesbian couples, the absence of a man to adopt the father role creates unprecedented legal dilemmas. The strength of biological ties becomes explicit with lesbian DI mothers, who are more vulnerable socially and legally than heterosexual couples. One respondent chose medicalized DI to provide "emotional security for the family unit, based on fear of challenge by other persons that [an outside] authority might consider parents."

DI Fathers

The definition of parenthood reported by DI fathers in this study corresponded to the responses of DI mothers: parenthood is a social project. Father of two DI sons, Jack commented that parenthood is "the bringing up, the guiding, the loving and caring for offspring ... throughout their life." The dissonance created by DI concerning parenthood was explicit when Jack was asked about DI-related decision making and the option of adoption. He responded (as was noted earlier) that DI was chosen so that "at least one of us would be the *real* parent of the children."

Another DI father, who also rejected adoption and perceived the family as synonymous with biological ties, said:

We are the family type ... We really want our own kids. We are not the type to just go out and adopt somebody else's kids. I feel strongly about that, and my wife does, too.

DI fathers (and lesbian co-mothers) are parents without a biological tie to their child(ren). For DI fathers, however, the social invisibility of the paternal biological tie and their conformity to heterosexual parental norms enables them to "pass" as biologically linked to their offspring. Given this possibility, however, they confront difficult decisions regarding the limits and conditions of maintaining secrecy.

Offspring

Adult offspring in this study were conceived within traditional heterosexual marriages in which the offspring's DI origins initially were concealed. Thus, they grew up believing their social father also was their biological father. Their descriptions of the circumstances under which they learned about their origins indicated the confusion caused by DI. Candace commented, "I refer to my social father as my pretend dad and my donor father as my real dad." Ross stated that after he learned of his DI origins he "never called [his] father 'dad' again." Suzanne commented that after her father told her of her DI conception, she "began the search for [her] real father."

The confused terminology used by offspring to describe their parental relationships suggests more than individual bewilderment. It also indicates the absence of clear cultural labels to describe these relationships, as well as the underlying resilience of the link between biological ties and familial bonds. In some instances, the DI offspring considers the absent and unknown biological father to be his or her "real" father. This lends primacy to an unknown individual over the one who has reared the child; thus, it is among the clearest indicators of the cultural strength of biological ties.

Suzanne, who is familiar with adoption issues as a birth mother, identified the social parent as "central." Yet the biological parent provides what she referred to as "true being" or "rightful and true heritage." The meaning of the latter was vague but, in Suzanne's view, it constituted a powerful component of identity.

Several DI offspring mentioned negative feelings about the insemination method that created them. Two female offspring considered themselves "bastards" because their mother and biological father weren't married. Suzanne also criticized the "sale" of sperm that created her. In a letter to an infertility newsletter, she wrote:

It is important to remember that, from where I sit (the child produced), DI and surrogate parenting are essentially the same. In DI, the birth father sells a product of his body to help create a child he does not want. In surrogate parenting, a birth mother rents her womb, then sells a product of her body (the child) to an outside party. As far as the distinction between the amount of the fees ... it's true, the birth mother's involvement is for a longer period of time — but what's essential to the child is that money changed hands ... one of their birth parents ... not only did not want the child, but helped create it for monetary gain.³⁵

Surprisingly, most offspring in this study spontaneously mentioned that they perceived themselves as "smarter than their parents" and attributed their intelligence to their DI origins.

Donors

Donors in artificial insemination programs are potential fathers of offspring they likely will never meet or know. Although donors typically are anonymous and usually are not told whether they have DI offspring, it is reasonable to assume that frequent or regular donors contribute to several DI conceptions. The tie between the donor and his offspring is the only *purely* biological link in the DI scenario. The donor's feelings and attitudes about his role, like those of the offspring, offer the most direct evidence concerning cultural attitudes toward biological ties, in particular paternal biological ties.

Almost half of the donors in this study expressed interest in and a desire to know their biological offspring. In some instances, donors appeared to be almost haunted by the possibility that they were biological fathers of children they did not and could not know. For example, Robert

commented, "Sometimes now when I go by a mother and a kid, you know, I think ... 'could this be one of them?' and sometimes it kills me because I could be ... I am technically his or her father and I am not allowed to be part of their life. At first, I didn't think it would bother me ... but now, whenever I pass one of them, I wonder."

Another donor expressed similar views:

Well, it's on your mind. You know, you hear someone say "it's a funny thing, I saw someone who looked just like you." And you find out he's 18 or 19 and you think ... if I had a son or a daughter he or she would be around 6 or 7.

Similar to the offsprings' descriptions of their biological fathers, the donors used a variety of terms to describe their relationships to possible offspring, revealing the lack of clear cultural categories or social definitions of DI-created parental roles. For example, Robert described himself as "technically his or her father" and referred to the social father as the "foster father." Drew used the terms "biological" and "social," and Tom referred to "natural parents."

The secrecy surrounding DI generally hinders the process of role clarification. Families created through adoption and remarriage have developed a language used by participants. Development of a language common to DI participants would be a first step toward role definition and cultural clarity about the DI process.

All donors in this study expressed an interest in knowing whether the DI was successful — even those who had no interest in meeting the child or who felt threatened by the idea of filed information that would identify them as the biological fathers. Their interest confirmed that the desire to reproduce may be distinguished from the desire to parent. This also was evident in some donors' remarks that donation allowed them to be "part of a reproducing thing."

Sperm donors agree to donate under conditions of mutual anonymity. All donors in this study indicated a desire for more information about the results of their sperm donation. In some instances, this was limited to curiosity about whether inseminations were successful; in others, it included interest in their offspring as individuals. Despite the anonymity agreement, several donors expressed a willingness to be identified to their offspring in the future.

Some donors spontaneously expressed empathy with infertile husbands. Their comments indicated some shared understanding of the meaning of infertility and, therefore, biological fatherhood. Several donors perceived the husband's infertility as a failure of manhood. For example, Larry commented, "The only thing I was curious about was ... how the husband would feel ... whether going through the pregnancy makes up for the fact that some other man's sperm is in their wife ... How do they cope with that? ... It would have to be a pretty open-minded husband."

Despite the separation of sexual intercourse from reproduction in DI, donors' responses indicate that donation carries sexual connotations. Commented George: "It is sort of like getting your wife f---ed by proxy." Several donors reported sexual fantasies about the recipient. The association of biological reproduction with manhood and the implication of adultery shed light on the difficulty of contacting DI fathers and the willingness of donors to speak about their experience.

Conclusions

The data analysis revealed a dissonance concerning the social meanings attributed to biological ties. This dissonance was conceptualized as poles of a continuum in tension with denial at one end and acknowledgment at the other. DI participants expressed denial in various ways. For example, DI mothers referred to the biological tie between their child and the donor as if it were an "allergy shot," "just a vial of semen," or "means to an end." Medicalization of DI facilitates denial because, as one DI mother described it, DI is "simply a medical solution to a medical problem." The practices of anonymity and secrecy, facilitated by medicalization, assist denial. In some cases, donors described their donations as similar to a blood donation and expressed little interest in the recipient. In most instances, recipients (mothers and partners) expressed a limited interest in the unknown donor. In contrast, only one adult DI offspring considered his "biological beginnings" irrelevant.

Acknowledgment of the significance of biological ties was observed in several ways. It was implicit in the very practice of DI, designed to "normalize" DI families to the traditional (biologically linked) nuclear model. The importance of anonymity of recipients and donors and the general practice of secrecy acknowledged the cultural definition of biological ties as meaningful for all participants. The choice of DI, described as providing the possibility for one partner to be a "real" or "true" parent, acknowledged both the cultural norm and its normative dimension. The importance of matching the donor's physical characteristics to those of the mother's partner was an explicit attempt to replicate the biologically linked nuclear family and disguise (with heterosexual couples) the absence of a biological tie between the child and the DI mother's male partner. Preferring the same donor for subsequent DI children, so that siblings will "look alike," also indicated by implication the importance of the blood relationship. Acknowledgment of the social significance of biological ties became most explicit when there was no male father figure who could "pass" as biologically linked. This also occurred with heterosexual couples when separation, death of a spouse, or problems such as mental illness (perceived as genetically linked) arose and secrecy was no longer feasible or desirable.

The identity of the anonymous donor surfaced as problematic for DI mothers who decided to inform their children about their origins. For lesbian couples or single women, secrecy was not feasible. Anonymity was still considered desirable, however, given the threat of legal suits from known donors to which lesbian mothers are particularly vulnerable. Donors acknowledged the importance of biological ties through curiosity about the results of their donation and, in some cases, interest in their biological offspring. Some offspring regarded their unknown biological fathers as their "real" fathers, granting them primacy over the fathers who reared them.

Biological ties, as revealed within the present analysis, carry substantial cultural meaning. Three themes were identified as indicative of the social meaning of biological ties:

1. Biological ties were regarded as "real" and were perceived as the source of individuals' genetic physical and social characteristics, including a significant component of identity. Words such as "real," "true," and "natural" were used to describe biological (parental) ties, reflecting both the cultural norm and its normative dimension. This theme emerged among all groups of DI participants studied, especially DI offspring.
2. Physical resemblance is regarded, almost celebrated, as a feature of biologically linked individuals and may be described as a signature of tradition. That physical resemblance may not always be apparent in biologically linked relationships was never mentioned. Some DI mothers described comments about physical features of their DI children as a "painful reminder" of the offspring's origins. Recipients were particularly concerned about matching physical characteristics. There was some indication that DI offspring are more accepting of their origins if they resemble their parents physically. Some donors expressed interest in what their biological offspring look like and sometimes were reminded of their role as sperm donors by the physical appearance of their "own" children.
3. Despite the separation of reproduction from the act of sexual intercourse in DI, biological ties (i.e., biological reproduction) did not emerge as lacking sexual meaning. Donors associated biological reproduction with, among other things, proof of manhood, virility, and masculinity, or perhaps, more simply, power. Infertility was associated with impotence, lack of virility, and failed manhood. Some donors viewed DI as establishing a sexual link with the DI mother.

Historically, civil actions have questioned whether DI is adulterous.³⁶ It is unlikely that any court would suggest this in the current context. Some traditional religions (including Hinduism and Roman Catholicism,

which were represented in this study) view DI as adulterous, that is, that it transgresses sexual norms. The difficulty reported by lesbian mothers concerning access to DI indicated that current DI practice is designed to maintain sexual and familial norms, especially the patriarchal component of these norms. In summary, this study revealed what might be called a "residual biologism" in underlying cultural assumptions about what constitutes "family."

Policy

DI practitioners and participants in Canada operate largely in a legal vacuum. In Quebec, legislation has clarified the consenting (social) father as the legal parent (as an irrebuttable presumption). The Yukon also has clarified the legal parentage of DI children.³⁷ At the request of Ontario's attorney general, the OLRC produced a report identifying the legal issues raised by artificial reproduction techniques and included proposals for legislation.

Ideally, solid research should form the foundation for policy, professional guidelines, and/or legislation. In the case of DI, however, such research is unavailable and is hindered by the prevailing practices of anonymity and secrecy. Although exploratory, qualitative data are not conclusive or generalizable, such data can identify issues involved in and arising from DI.

The following discussion is limited to OLRC issues that can be addressed through the present study. The results of the study are particularly relevant to three recommendations concerning: (1) the donation of sperm by minors; (2) the absence of legislation to ensure that biological parentage *can* be linked to offspring for purposes other than tracing genetic disease; and (3) the allocation of self-regulating powers that are decidedly non-medical in character to the medical profession.

Minors as Sperm Donors

Clearly, the OLRC recommendation that "the issue of sperm donations by minors should be left to the general law, which now permits such donation"³⁸ shows the limitations of the legal perspective in dealing with social issues. The authors concluded that sperm is not "tissue" as defined by the Human Tissue Gift Act; thus sperm is considered the legal equivalent of blood, since it "is replaceable by natural processes of repair."³⁹

The OLRC recommendation rests on sound legal and biological reasoning, but it is socially naïve. Despite a shared process of reparation, sperm and blood are distinct in social meaning. This study documented this theme, including donors' curiosity about the results of their donations, interest in their biological offspring, and a preference for secrecy about their role. The strength of social meanings attributed to biological ties distinguishes sperm donation from blood donation. Blood sustains but does not create life. The social organization of blood and sperm donation

reflects this distinction: blood donors are solicited publicly, and blood donation is considered honourable; in contrast, the sperm donor's role is clandestine.

Donors in this study expressed various attitudes about their donations. Younger donors may not fully understand the consequences of their donations and, later, may be haunted by the possibility of having fathered several children unknown to them. The OLRC report recognized the issue of informed consent: "Legislation should expressly require a donor's free and adequately informed consent as a precondition to the donation or use of his or her gametes."⁴⁰ The strength of this recommendation is weakened, however, by placing control in the hands of physicians, who may have a strong interest in obtaining donations: "Whether minors may be suitable as sperm donors is, we believe, a matter of clinical judgment, to be determined according to the standards and principles of professional medical practice."⁴¹ As well, given the association of biological reproduction with virility and masculinity, other motives may override a donor's full understanding of his actions.

Certainly, age alone does not necessarily indicate maturity; however, if such legislation is enacted, donors will be expected to fully understand the consequences of biological reproduction before they are even considered old enough to marry without parental consent or drink alcoholic beverages.

French sperm banks (CECOS or Centres d'Étude et de Conservation des Oeufs et du Sperme Humains) define their objectives socially and technically to improve DI's public image. For example, they require that a "potential donor must be married and father of at least one child; he must have his wife's consent and receives no compensation for donating sperm ... No donor's sperm is used for more than five pregnancies."⁴² Although conservative, this model suggests that consideration of DI's social and technical issues could improve its social acceptability, thereby encouraging donations.

Linkage

The OLRC's terms of reference called for the report to set out "the legal procedures for establishing and recognizing the biological parentage of children born as a result of these practices."⁴³ The report dealt with the issue of linkage between donor, offspring, and recipients in discussions concerning the status of the child, parentage, birth registration, medical records, and other topics. The recommendations proposed masking DI biological parenthood. This does not ensure that links between offspring and biological parents will be maintained, and it serves the interests of donors and physicians rather than those of the child. Given the wealth of unknown possibilities for all concerned — particularly the offspring — legislation to ensure that records linking donors, offspring, and recipients are maintained is of primary importance. For example, respondents in this

study repeatedly mentioned the potential need for medical information about the biological father.

The issues of birth registration and establishing parentage now are governed by the Vital Statistics Act and the Children's Law Reform Act in Ontario. Despite the precedent of adoption, which records biological parentage in a separate file, no similar practice was recommended for DI. The OLRC report recommended legislation that deems the mother's consenting partner to be the legal parent and eliminates the sperm donor's legal rights. It recommended that the fact of artificial conception should not appear in the register,⁴⁴ and no public record of biological parentage should be maintained.

A second method of linking biological fathers and their DI offspring is through medical records. The current system of medical record keeping is governed by the Health Disciplines Act for individual practitioners and the Public Hospitals Act for physicians practising in hospitals. Although the Health Disciplines Act requires that records be kept for only six years⁴⁵ — an inadequate period to protect the interests of DI participants — the Public Hospitals Act requires that records be kept for 50 years,⁴⁶ a more reasonable time period to maintain linkage.

Self-regulation of record keeping by physicians proposed by the OLRC report, however, involves several weaknesses. As no special licence is required to practise assisted reproduction services, practitioners cannot be identified or regulated. Also, despite the recommendation that gamete donors be treated as patients for record-keeping purposes, the practice of some physicians (documented in this study) of using more than one donor per cycle (so "you can't tell who the father is") would appear to make linkage impossible. The OLRC report stated that "we understand that the practice of most doctors is to keep records that link donors to recipients, while at the same time preserving the anonymity of the parties."⁴⁷ However, exploratory data collected for this study indicates record keeping is haphazard. Several respondents commented that they knew "no records were kept."

An alternative model of registration or record keeping, similar to that now used for adoption, was not considered. This could involve a separate registry linking donors and their biological offspring, with regulated access. At the very least, future options should not be eliminated since unforeseeable events may alter the concerns of those involved.

The issue of linkage is closely related to the issue of disclosure. The OLRC report recommended that the decision whether to tell children of their origins "should remain with the legal parents." Research and policy in the field of adoption, however, clearly favour telling the child, and adoption practice reflects this philosophy.⁴⁸ Although the analogy of adoption practice is not exact, the history of adoption practice can be informative about errors that need not be repeated with DI.

Medical Self-Regulation

Medicine and law are self-regulating professions; thus, the OLRC recommendation that self-regulating powers over assisted reproduction services be allocated to the medical profession was in line with current policy. As demonstrated in this study, however, the social implications of DI reach beyond medical boundaries. As well as concerning issues already noted — such as the suitability of minors as sperm donors, record keeping, the absence of a method of monitoring physicians involved, and the lack of follow-up on recipients — physicians are granted other decision-making powers that are decidedly non-medical in character. Issues particularly relevant to this study are access to records and frequency of sperm donations.

Regarding access to records, the OLRC report recommended that “the decision concerning access to medical records by the parties involved ... should be left to individual members of the medical profession.”⁴⁹ Defined as the practice of medicine, therefore, DI falls neatly within existing legislation. The OLRC report did not address the possibility that a different arrangement, negotiated among participants at the time of donation, may be preferred. For example, a donor may agree to reveal identifying or non-identifying information to recipients and to offspring when the offspring reaches a certain age.

Significance of Research

In addition to illuminating the unexplored experience of DI participants, this study has implications for the broader area of the sociology of the family. In particular, it demonstrates the endurance of biologically linked parental roles. Despite evidence that many families do not conform to the traditional model of two heterosexual parents rearing their genetically linked children to adulthood,⁵⁰ this family image persists as a powerful cultural norm — together with the assumption that this traditional family form is qualitatively superior to other families. Attempts to “normalize” DI families to this model — through anonymity between the donor and recipients, secrecy about the procedure, and the descriptions of biological parenthood as “real,” “true,” and “natural” — testify to its persistence.

The legal difficulties posed by DI are evidence of the extent to which biological ties are culturally embedded as permanent, irrevocable parental bonds. Still, the divergence of parental roles from the biologically linked model suggests that, now and in future, parenthood may be conceptualized as both an achieved and an ascribed social role. The uncomplicated nature of DI, which simply replaces sexual intercourse, heralds the possibility of tremendously varied family forms. To the extent that parenthood emerges as non-biological, as in the case of the male or female partners of DI mothers, new parental roles are essential.⁵¹ Biological lineage may remain meaningful, but it will not define “family.” Lineage also may be

incorporated into an expanded notion of family, with child-rearing rather than biological parenthood granted primacy. In some cases, biological and rearing roles may remain linked.⁵²

The advent of more technically complex assisted reproduction techniques signals the possibility of still greater complexities in biological and social parenthood. Today, a child already may have five parents (through the use of donor sperm, donor ova, and a gestational mother), three of whom are different from the child-rearing mother and father. If the blood-tied family remains the norm, donors of gametes (whether sperm or ova) likely will be anonymous.⁵³ At the same time, procedures that preserve genetic links to parents will be preferred whenever possible. For example, DI to circumvent male infertility in heterosexual couples will be replaced by IVF in cases in which the male partner has a low sperm count and the female partner is fertile. Indeed, there is some evidence that this already is occurring.⁵⁴ In summary, technologically sophisticated, invasive, and expensive procedures may be used to preserve the cultural norm of biologically linked parenthood. The alternative — to redefine and come to terms with distinct biological and social parental roles — is a social and structural challenge rather than a medical problem.

In sum, this study investigates a largely unexamined but fundamental cultural attitude concerning parental norms and family forms. A modern refrain predicts and mourns the demise of the family; however, sociological investigation documents the demise of a certain family type and the emergence of diverse family forms. Retaining an obsolete norm undermines the experience of individuals involved in these diverse families.

Attempts to “normalize” families created through DI to the nuclear model frequently are couched in terms of “the best interests of the child.” However, children’s best interests are not served by deception and secrecy about their origins. Rather, the interests served include preserving an increasingly outdated image of family relations, protecting the donor and the social father, and allocating unwarranted discretionary powers to physicians. If children’s best interests are to be taken seriously, parental roles and family forms must be redefined.

Appendix 1. Questionnaire and Interview Guide

Married DI Mothers and/or Social Fathers

Complete Confidentiality Guaranteed

Personal Data

Age

Occupation

Marital status

Marital history (number and duration of marriages)
Ages of children (including those from other marriages)
Date and number of inseminations
Cost to you

Themes

The reason for DI rather than, for example, adoption.
Describe the experience of infertility (if relevant).
Describe the decision-making process leading to DI.
Describe your prior knowledge or anxieties about the procedure.
Please describe your current family structure.
How much information do you have about the donor?
Are you satisfied with this information? Would you like more or less?
Why?
Who knows that the child was conceived in this way?
Describe your general feelings about the procedure.
What is the legal status of your DI child(ren)?
Describe your feelings about the donor.
Do you see a need for secrecy about the procedure? Why or why not?
What do you intend to tell your child about his/her origins? (If you already have told the child, please describe this experience and the child's response.)
What do you perceive as the advantages of secrecy?
What do you perceive as the disadvantages of secrecy?
Were you given any guidance by your physician about telling or not telling your child about his/her origins?
Was there any follow-up by the inseminating physician?
Briefly describe your definition of parenthood.
Is there anything else you would like to mention about your DI experience?

Lesbian and/or Single DI Mothers

Complete Confidentiality Guaranteed

Personal Data

Age
Occupation
Education
Marital status
Marital history
Duration of current relationship (if any)
Ages of DI children
Other children
Date and number of inseminations
Cost to you

Themes

The reason for DI rather than, for example, adoption.
The decision-making process leading to DI.
Prior knowledge of DI and anxieties about the procedure.
Did you have any problems with access to DI services?
Description of current family structure.
Do you have any feelings about the donor?
What information do you have about the donor? Would you like more or less? Why?
Do you see a need for secrecy about the procedure? Why or why not?
Who knows that the child was conceived in this way?
What are your general feelings about the procedure?
Were you given any guidance by the inseminating physician about telling your DI child about his/her origins?
What do you intend to tell your child(ren) about his/her origins?
If you already have told your DI (or other) children, how did they respond?
Please describe this experience.
What is the legal status of your DI child(ren)?
Was there any follow-up by the inseminating physician?
Briefly describe your definition of parenthood.
Have you told any family members? If so, how did they respond?
Is there anything else you would like to mention about your DI experience?

Donors

Complete Confidentiality Guaranteed

Personal Data

Age
Occupation
Education
Marital status
Marital history (if married, number of marriages and length of marriage)
Are you in a serious relationship now?
Ages of children (if any)

Themes

If you do not have children, do you plan or want to have children in the future?
Number of donations.
When?
Where?
How were you solicited?
Were you paid? If so, how much were you paid?
Was the payment important to you?
If you had not been paid, would you have donated anyway?
Were you screened by a physician?

What did the screening consist of?
Please describe the initial interview.
Why did you decide to donate?
Do you have any feelings about your possible DI offspring?
What are your general feelings and attitudes about the procedure?
If you have a spouse or partner, does he/she know about your donations?
Was your spouse or partner part of the decision to donate?
What were his/her feelings or response to the procedure?
Do any other family members know about your donations?
What was their response?
Is there anything else about your DI experience that you would like to mention?

Offspring

Complete Confidentiality Guaranteed

Personal Data

Age
Occupation
Education
Marital status
Marital history

Themes

When were you told about your DI origins?
How and by whom were you told?
What were your feelings then about this information?
What are your feelings now?
Briefly describe your definition of parenthood.
What do you know about your biological father?
What would you like to know? More or less? Why?
Describe why knowledge about your biological father is or is not important to you.
How did the information that you were conceived through DI affect you?
Did you have any feelings or clues before you were told?
How do you think a child can best be told about his/her DI origins?
Is there anything else that you think is important to mention?

Notes

1. M. Eichler, *Families in Canada Today* (Toronto: Gage, 1983).
2. Occasionally the semen is placed inside the woman's uterus (intrauterine insemination). This procedure is generally employed when a woman's cervical mucus rejects her husband's or partner's sperm.

3. AIC originated as a practice to encourage the belief that resulting offspring were the biological issue of the husband. It is currently less common, since paternity testing can now determine more accurately who is the biological father.
4. See W.W. Beck, Jr., "A Critical Look at the Legal, Ethical, and Technical Aspects of Artificial Insemination," *Fertility and Sterility* 27 (1976): 1-8; A. David and D. Avidan, "Artificial Insemination by Donor: Clinical and Psychological Aspects," *Fertility and Sterility* 27 (1976): 528-32; R. Iizuka et al., "The Physical and Mental Development of Children Born Following Artificial Insemination," *International Journal of Fertility* 13 (1968): 24-32; and R.C. Strickler, D.W. Keller, and J.C. Warren, "Artificial Insemination with Fresh Donor Semen," *New England Journal of Medicine* 293 (1975): 848-53.
5. Beck, "A Critical Look at the Legal, Ethical, and Technical Aspects," 4.
6. Genetic abnormalities commonly avoided through DI include cystic fibrosis, diabetes, haemophilia, Huntington's disease, muscular dystrophy, and Tay-Sachs disease.
7. Ontario Law Reform Commission, *Report on Human Artificial Reproduction and Related Matters* (Toronto: Ontario Ministry of the Attorney General, 1985), 18.
8. M. Curie-Cohen, L. Luttrell, and S. Shapiro, "Current Practice of Artificial Insemination by Donor in the United States," *New England Journal of Medicine* 300 (1979): 585-90.
9. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*.
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12. U.S. Congress, Office of Technology Assessment, *Artificial Insemination: Practice in the United States: Summary of a 1987 Survey — Background Paper* (Washington, DC: Office of Technology Assessment, 1988), 3.
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14. Artificial insemination has been used for centuries in the animal world; however, this study is concerned only with its use on humans.
15. A.T. Gregoire and R.C. Mayer, "The Impregnators," *Fertility and Sterility* 16 (1965): 130-34.
16. Medicalization of the procedure also introduces a number of additional medical measures to increase the efficiency of the procedure. In some instances, to ensure the recipient is fertile, potential DI mothers may undergo a number of fertility tests and may be prescribed fertility drugs to regulate ovulation.
17. The onus on keeping records is not necessarily a legal one since donors are, arguably, not patients. The Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 278, has recommended that "donors are patients for the purposes of record keeping."

18. Even if accurate medical records are maintained there is the additional issue of access to these records by participants.
19. One sibling of a DI offspring, two donors' parents and four DI physicians also participated in the study; however, their contribution was not substantial. (See Methodology.)
20. I would like to acknowledge my debt to H.D. Kirk's study *Adoptive Kinship: A Modern Institution in Need of Reform* (Toronto: Butterworths, 1981), in which he used a similar framework — the acknowledgment and denial of the adoptive family's atypical reality — as the conceptual basis for his study.
21. G.E. Hanscombe and J. Forster, *Rocking the Cradle — Lesbian Mothers: A Challenge in Family Living* (London: Peter Owen, 1981), 10.
22. See L.B. Andrews, *New Conceptions: A Consumer's Guide to the Newest Infertility Treatments, Including In Vitro Fertilization, Artificial Insemination, and Surrogate Motherhood* (New York: St. Martin's Press, 1984); and P. Nijs and L. Rouffa, "A.I.D.-Couples: Psychological and Psychopathological Evaluation," *Andrologia* 7 (1975): 187-94.
23. See M.S. Frankel, "Artificial Insemination: The Medical Profession and Public Policy," *Connecticut Medicine* 38 (1974): 476-80; R. Schoysman, "Problems of Selecting Donors for Artificial Insemination," *Journal of Medical Ethics* 1 (1975): 34-35; and F.C. Fraser and R.A. Forse, "On Genetic Screening of Donors for Artificial Insemination," *American Journal of Medical Genetics* 10 (1981): 399-405.
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25. American Fertility Society, Ethics Committee, "Ethical Considerations of the New Reproductive Technologies," *Fertility and Sterility* 53 (Suppl. 2)(1990), 44S.
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27. Ibid.
28. A.M. McWhinnie, *Adopted Children: How They Grow Up: A Study of Their Adjustment as Adults* (London: Routledge and Kegan Paul, 1967).
29. J. Brandon, "Telling the AID Child," *Adoption and Fostering* 95 (1)(1979): 13-14.
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31. D.M. Schneider, *American Kinship: A Cultural Account* (Englewood Cliffs: Prentice-Hall, 1968), 24.
32. Kirk, *Adoptive Kinship*, 98.
33. Eichler, *Families in Canada Today*.
34. E.J. Farris and M. Garrison, "Emotional Impact of Successful Donor Insemination: A Report on 38 Couples," *Obstetrics and Gynecology* 3 (1954): 19-20.
35. S. Rubin, *Letter to RESOLVE*, personal communication (27 January 1984).
36. B.M. Dickens, *Medico-Legal Aspects of Family Law* (Toronto: Butterworths, 1979).

37. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 374-75.
38. *Ibid.*, 276.
39. *Ibid.*, 60.
40. *Ibid.*, 276.
41. *Ibid.*, 163.
42. S. Novaes, "Social Integration of Technical Innovation: Sperm Banking and AID in France and the United States," *Social Science Information* 24 (1985), 573.
43. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 1.
44. *Ibid.*, 278.
45. Health Disciplines Act, R.S.O. 1980, c. 196.
46. Public Hospitals Act, R.S.O. 1980, c. 410.
47. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 82-83.
48. R. Garber, *Disclosure of Adoption Information* (Toronto: Ontario Ministry of Community and Social Services, 1985).
49. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 189.
50. Eichler, *Families in Canada Today*.
51. Data collected from donors suggested that the desire to reproduce biologically often is separate and distinct from the desire to (socially) parent a child.
52. Media reports indicate that technology is available to enable men to give birth, creating an even more complex picture of possible parental roles. See D. Teresi and K. McAuliffe, "Male Pregnancy," *Omnit* 8 (3)(1985): 51-52ff.; and "Male Birth Possible, UK Magazine Says," *Globe and Mail* (9 May 1986): A11.
53. For example, the Toronto Fertility Sterility Institute recently announced expansion of its IVF program to include anonymously donated eggs. See L. Clark, "Embryo May Be Implanted in Women Without Ovaries," *Globe and Mail* (16 December 1985): A13.
54. See G. Corea, *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs* (New York: Harper and Row, 1985); and L.S. Williams, "Who Qualifies for In-Vitro Fertilization? A Sociological Examination of the Stated Admittance Criteria of Three Ontario IVF Programs," paper presented at the annual meeting of the Canadian Sociology and Anthropology Association, Winnipeg, June 1986.

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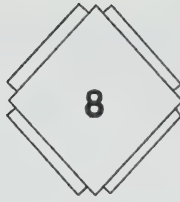
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Lesbian Women and Donor Insemination: An Alberta Case Study

Fiona A.L. Nelson



Executive Summary

Research conducted in Alberta in 1991 indicates that there are particular issues and concerns that lesbian women face when they seek motherhood through donor insemination or self-insemination. In particular, lesbian women are, as a rule, denied access to mainstream medical facilities such as fertility clinics and their affiliated sperm banks. This means these women have to either rely on individual doctors who may or may not decide to help them, or find their own donors. The type of medical screening that is possible with "live donors" is markedly inferior to that which sperm banks can do on donors when the sperm can be frozen and stored. The cost of medical assistance, if available, may be prohibitive for lesbian women. Finally, issues of access and expense are exacerbated by a social and attitudinal context in which "lesbian family" is not a viable concept.

Introduction

The primary focus of this paper is self-insemination (SI) as it is being practised by lesbian women in Alberta. A broader area of inquiry, lesbian

motherhood, provides insight into the social and attitudinal context(s) in which SI occurs, and so will be briefly discussed in this regard.

During the period February to August 1991, 26 lesbian women in Alberta were interviewed¹ to gain information about SI and donor insemination (DI) conducted outside "mainstream" medical settings (e.g., infertility clinics) and to uncover elements of the mothering experience that may be unique to lesbian women.

Lesbian women are not the only women using SI and DI; however, their experiences must be included in any complete analysis of SI and DI in Canada. Due to the small number of interviewees and the method by which they were identified for study ("snowballing" — a method whereby respondents refer other potential respondents to the researcher), the sample cannot be considered wholly representative or random. Nonetheless, it provides useful evidence of common issues, concerns, and shared experiences that have been little researched to date. The purpose of this paper is to identify issues and concerns that are important for lesbian women as they pursue motherhood, especially through SI and/or DI.

The first section offers a brief demographic overview of the women interviewed. It is interesting to note that it appears to be only a particular segment of the lesbian population that is seeking/achieving motherhood. This group will be compared with a sample of lesbian mothers who had their children through prior heterosexual relationships/contacts, for the purpose of examining the similarities and differences in the two groups.

The second section discusses current practice regarding alternate access to DI in Alberta. The third section identifies and discusses issues related to traditional and non-traditional means of access to donor sperm in Alberta. The fourth section identifies and discusses issues related to the social context of DI/SI, especially as they are carried out in non-traditional settings. The fifth section provides conclusions and suggestions for the future.

The Study Group and Setting

As detailed in Table 1, the 26 interviewees included 12 women who were in lesbian relationships when a child (or children) had been conceived (Group A). Fourteen women were in lesbian relationships and had children conceived through prior heterosexual contact (Group B).

Because the 26 women (13 couples) were identified by snowballing, this sample cannot be considered random or necessarily representative. For example, it is estimated that a very large proportion of the lesbian population has had children through previous heterosexual relationships/contacts. However, the 12 women (six couples) who were involved in alternate insemination do appear to constitute a sizable

proportion of this population in Alberta and so may be considered a more representative sample.

As shown in Table 1, the mean age of women in each group was the same, at approximately 34.5 years. The age range of the two groups was also very similar. The seven Group B couples (14 women) had a total of 21 children of whom 14 were at least 14 years old, while the six Group A couples had a total of only seven children of whom only three were aged four years or older.

Table 1. 26 Lesbian Women in Alberta Interviewed February-August 1991

	Group A	Group B
	Child(ren) conceived during lesbian relationship	Child(ren) from previous heterosexual relationship
Total number of women	12	14
Total number of couples	6	7
Age range	28 to 46 years	26 to 42 years
Mean age	34.5	35
Education levels		
High school	3	1
Some post-secondary	7	3
Undergraduate degree	2	6
Graduate or professional degree		3
Range of duration of relationship	3.5 to 28 years	7 months to 7 years
Mean annual income for couples	\$39 000	\$47 000
Total number of children	7	21
Age of children	≤ 4 years (4/7)	≥ 14 years (14/21)
Age range of children	8 months to 19 years	7 to 22 years

Each group was highly educated. Seventy-seven percent of Group A had at least some post-secondary education while 15 percent held an undergraduate degree. Eighty-eight percent of Group B had at least some

post-secondary education, with 64 percent holding at least an undergraduate degree. Perhaps in keeping with the differences in education levels, the mean income also differed between the two groups. The mean annual income for Group A couples was \$39 000; for Group B couples it was \$47 000.

Although the number of couples studied is small, a tentative profile of the "typical" member of each group can be drawn.² The Group A woman left her parents' house in her late teens or early 20s. She may have already identified herself as a lesbian or she began to do so by her early 20s. She spent her 20s working and upgrading her education with a year or two of further training. She had very little support from her parents during these years. She may have been in two or three relationships during her 20s. In her late 20s or early 30s she met her current partner. If she had not already done so, she chose to "come out" to her family and friends at that time.

She and her partner probably started discussing their desire to have a child or children very early in the relationship. After waiting a year or two to test the stability of the relationship, they started exploring means of achieving pregnancy. Once they decided how to get pregnant and had made the arrangements, it generally took less than six months of insemination to achieve pregnancy.

The parents and siblings of the biological mother probably expressed initial dismay but then came around and were quite excited about the grandchild/niece/nephew. The parents of the non-biological mother may or may not have been supportive, but they almost certainly do not acknowledge the child as their grandchild or respect it as their daughter's child. The non-biological mother's siblings tend to be more supportive than her parents.

Once the child was born, the couple tried to arrange for at least one of them to stay home with the baby. Sometimes this role alternates, with the partners working opposing part-time shifts or seasonal jobs. There is general reluctance to put the child into child care much before the age of two, and this can create economic hardships for the family. The lesbian community (especially close friends) provides vital emotional and material support, which, in many ways, may compensate for the lack of support from the couple's families of origin.

A woman in Group B probably was married quite young (by her early 20s), at which time she probably discontinued any education or employment she might have been engaged in. She had two, three, or four children soon and close together. She was separated or divorced by her late 20s, at which time she went back to school, generally to finish her undergraduate degree or to pursue graduate/professional training.

She "came out" as a lesbian in her late 20s or early 30s and had been involved in one or two lesbian relationships at the time of the interview. She is currently completing her education or is embarking on a professional

career. At the time of the research she was involved in what she considered to be her first "serious" lesbian relationship.

She probably has sole custody of her children, and her partner probably has custody also of one or more children. She and her partner have created a blended family and deal with many standard step-parenting issues as well as issues arising among the children, kin network, and social circle regarding their lesbianism.

There is a significant point about these profiles that must be noted. The Group B profile captures a group of women at a particular point in a *process*. In other words, it is probably as a result of the identification method used that this portion of this population was studied. This group is captured at a point in time; if the sample had been of women five or 10 years younger or older, although their stories would have been similar, they would have been caught at different points in the same process.

The women in Group A are not, for the most part, a portion of a larger group of women captured at a certain point in time. Women five years younger or 10 years older could probably not have been found. This set of circumstances is a relatively new phenomenon, something that is occurring now, and it is these women, in their late 20s to mid-30s, who are doing it.

What this seems to suggest is that DI/SI may be growing in popularity among a particular subgroup of lesbian women. Since there is no reason to believe that this trend will reverse in the near future, it is useful to look more closely at this population and their experiences as they attempt to achieve pregnancy.

Alternate Access to DI in Alberta

For clarity, it is necessary to define how the terms DI, SI, and TDI (therapeutic donor insemination) are used in this paper. DI denotes donor insemination; that is, insemination assisted by or performed by someone apart from a woman or her partner, but not done in the traditional medical setting. This may include doctors operating outside mainstream medical facilities or individuals or groups who offer this service. SI refers to self-insemination; that is, insemination performed by a woman herself and/or her partner. TDI refers to insemination carried out as a medical procedure in a mainstream medical setting (generally, an infertility clinic) often affiliated with a large urban hospital.

None of the six couples in the Alberta sample used TDI. The primary reason for this is that fertility clinics in Alberta have a policy of refusing to assist lesbian women or single heterosexual women. Ten of the 12 women interviewed said that they would have used the services of an infertility clinic or, at least, procured information from an infertility clinic if they had been able to.

During the past two years, however, it has become known that a group of Calgary doctors will assist such women in inseminations in their offices. In particular, they serve women or couples denied access to infertility clinics.³ These doctors bring in sperm from sperm banks such as Toronto-based ReproMed, and have facilities for limited, short-term sperm storage. The cost must be covered by the woman or couple seeking insemination, since Alberta Health Care does not offer coverage for artificial insemination. The recipient also must cover all associated medical expenses. These combined costs often prove prohibitive to lesbian women, an issue that will be discussed more fully later. At least in part because of these costs, none of the women in the six couples studied had chosen TDI.⁴

As indicated in Table 2, among the interviewees were two couples who achieved pregnancy by engaging in heterosexual intercourse. What distinguishes these women from those classified as having children through prior heterosexual contact is their orientation toward the sexual intercourse that occurred. For both the couples who chose this route, sexual intercourse was perceived as their only viable option for attaining pregnancy. One couple was pursuing this option 20 years ago when they had never heard of DI. The other couple pursued this route only three years ago, in a city where they had been unable to get DI assistance, support, or information from any person or mainstream or alternative organization.

For both couples, sexual intercourse represented simply a means of transporting sperm from point A to point B. The male was seen not as a "partner" but as a "donor." The couple who did this in the early 1970s informed their donor of their relationship and intentions. The other couple chose not to inform their donor of their purpose. These couples both indicated they would have used SI, DI, or TDI if it had been available to them.

Table 2. Women with Child(ren) Conceived Within Lesbian Relationship*

Will child(ren) have access to donor info?	Donor insemination		Sexual intercourse		Total
	Known donor	Unknown donor	Informed donor	Uninformed donor	
Yes	1	3	1	0	5
No	0	0	0	1	1
Total	1	3	1	1	6

* Total sample size — six couples.

Four of the six Alberta couples surveyed performed self-insemination. This is a very low-tech procedure, the most complicated aspect of which is coordinating all the people who may be involved in getting the sperm from inside the body of the donor to inside the body of the recipient. Three of these couples were aided by a person who helped procure the donors and transport the sperm. These procurers/runners belonged to a support group offering these services. Donors and recipients thus remained unknown to each other.

The procurer arranged for the donors to take tests for human immunodeficiency virus (HIV) through a doctor who passed on the results to the procurer. A second HIV test was done six months later. Additionally, donors were requested to have medical exams (including testing for sexually transmitted diseases) and were required to complete a medical history, which would be made available to the prospective recipients. If everything else was acceptable, the donors could begin donating after the second negative HIV test.

Donors were asked not to engage in "risky" behaviour (e.g., unprotected sex) after their first HIV test. They were requested to inform the procurer if they engaged in such behaviour so that they could withdraw from the program. It is important to recognize that this method of HIV testing at six-month intervals is not as effective at identifying safe sperm as the usual medical policy. In that policy, sperm is frozen, and if six months later the donor tests negative for HIV, the previously frozen sperm is used. This is done because it may take up to six months after infection with the HIV virus for the blood test to become positive. Thus a negative test does not indicate no infection at the time, but six months prior. However, the recipients were willing to take the risk that donors would be reliable and truthful and that the available testing would be "good enough."

Meanwhile, the recipient had been instructed to chart her basal temperature and employ any other means that would allow her an accurate understanding of her fertility. When the time came to begin insemination, the recipient was encouraged to use an ovulation predictor kit for greater accuracy.

Each recipient had two donors who would donate on alternating days. The women chose to have two donors so that they could be inseminated three to four times per cycle without seriously depleting one donor's sperm count. Another perceived advantage to having two donors was that, even if the recipient somehow discovered the identities of the donors, she would still not know which one was the "father." Ideally, the recipient would be inseminated the day before ovulation, the day of ovulation, and the two days following ovulation. It also was recommended that insemination be carried out at the same time daily.

Donors were instructed to ejaculate into sterilized jars or sterile specimen containers. The container was then put into a wool sock, placed into a paper bag, and handed over to the runner. The runner kept the

sperm at body temperature in her armpit or inside her coat as she drove it to the recipient's house or prearranged meeting place.

The recipient or her partner would use a small, needleless syringe to remove the semen from the container and insert it into the recipient's vagina. The recipient was instructed to remain reclining, with pelvis raised, for at least half an hour. Three couples achieved pregnancy in less than six cycles of insemination. However, one of these couples miscarried twice and so ended up going through the insemination process three times before a pregnancy went to term. The fourth couple used donors known to them; thus, there was no procurer/runner. The procedure was identical to that followed by the other women except that the donors delivered the semen to the house themselves. This couple achieved pregnancy during their second cycle of insemination.

Issues Related to Access to Donor Sperm

Traditional Access

The "traditional" means of achieving pregnancy is through heterosexual intercourse; however, many lesbian women do not consider this an acceptable option. Frequently, the choice not to have heterosexual intercourse is a component of a woman's self-identification as a lesbian. Further, it is not uncommon for lesbian women to have relatively few male contacts in their social circles. Thus, even if a woman were willing to have sex with a man, she might not know a man whom she feels would be acceptable.

Both of the women in the Alberta sample who had engaged in sexual intercourse to become pregnant did so with men they knew and liked. In fact, these men were *chosen* on the basis of characteristics that the women approved of. Each woman expressed that she would have been unable to have a sexual relationship/encounter with a man who was unknown to her. Apart from health concerns, there was discomfort with the idea of having intercourse with a stranger. It would appear that, for the most part, heterosexual intercourse is the least appealing option for lesbian women seeking pregnancy and one that is chosen only as a last resort.

Mainstream Access

The term "mainstream" is used here to refer to medicalized procedures performed within, or affiliated with, organizations that exist for the purpose of performing, or assisting with, various insemination procedures. Such organizations include infertility clinics and commercial sperm banks.

Access Through Infertility Clinics

As mentioned, infertility clinics have been inaccessible to lesbian women in Alberta. Canadian infertility clinics often adhere to a policy (explicit or implicit) of helping only married heterosexual couples achieve pregnancy. Frequently, these couples must also be able to cover all the financial costs of what may be expensive procedures. These factors may serve to narrow the population eligible for assistance.

Access Through Sperm Banks

Frequently, sperm banks are affiliated with infertility clinics and operate to store sperm of and for their clientele. Thus, people denied access to the clinic also are denied access to the affiliated sperm bank, with both its stores of sperm and its technological capacity for sperm storage.

An exception to this rule is Toronto-based ReproMed, which ships sperm across Canada and does not screen recipients based on sexual orientation or financial status/stability. Because ReproMed is a commercial agency, however, the costs involved in procuring sperm through it can be high. Further, ReproMed ships sperm only to qualified medical personnel.⁵

Access Through Medical Practitioners

Those doctors who operate outside the aegis of the infertility clinics and who are willing to assist women who are unable to use the infertility clinics lie somewhere between the classifications of "mainstream" and "alternate" access. There are several such doctors in Calgary but a dearth of them elsewhere in Alberta.⁶ The biggest deterrent for women wishing to use these doctors' services, apart from regional inaccessibility, is the expense involved. Since Alberta Health Care does not cover insemination, the recipient must pay all medical fees, purchase the sperm, and pay any shipping and storage costs. A Calgary woman inseminated by a doctor who brings in sperm from ReproMed could easily face expenses of at least \$500 per cycle.⁷

Insemination with Frozen Sperm

Because of perceived advantages of DI with previously frozen sperm, five of the six couples interviewed stated they would have preferred to use this means if it had been possible for them to do so. The most favoured advantage is that frozen sperm from a sperm bank is incubated for at least six months while repeated HIV tests are performed on the donor. Such testing is more reliable than testing the donor every six months without storing the sperm. Additionally, the medical/genetic screening performed on the donor by a sperm bank is generally more thorough than is possible by informal women's groups established to assist each other achieve pregnancy.

Generally, insemination performed in a doctor's office with previously frozen sperm entails depositing the sperm directly into and/or around the cervix. The women interviewed perceived this as more efficient than

depositing the sperm in the vagina, which women performing SI must generally do.⁸

Apart from real concerns about cost, there are other issues or concerns regarding DI with frozen sperm. While it may or may not be offset by any advantages of cervical versus vaginal insemination, frozen semen has a lower sperm count and the sperm has lower motility. In other words, the women feel that "live donations" may be the most effective.

The Medicalization of Access

A major issue for lesbian women considering DI is the prospect of the medical intervention that would be involved. The concerns here are two-fold. First, insemination is not necessarily a high-tech procedure and so there is resentment that the procedure has been medicalized to the extent that it is removed from the capabilities and volitions of the individuals who may wish to use/perform it.

A second concern here is with the medical environment itself. This is relevant not just for the DI procedure but for the medical care required through pregnancy and childbirth. It can be extremely difficult for lesbian women to find doctors who are "sympathetic," let alone doctors who actually respect lesbian women as reproductive beings. The attitudes and actions of the support staff in the various settings that women visit in the process from insemination to birth can be quite disconcerting. Not surprisingly, many women feel quite vulnerable during this process and, unfortunately, medical personnel/settings do not always reassure them.

Alternate Access

Four of the couples in the Alberta sample used what can be called "alternate" means of insemination; that is, SI with sperm from a known or unknown donor.

Legal Issues

The medicalization of DI/SI has the potential to remove the choice to inseminate from individual women. Procurers of donors and runners of sperm are concerned that if "discovered," they could be charged with something like "practising medicine without a licence." No legislation specifically forbids what these women are doing; it is a grey area under the law.

There is resentment both that insemination falls under the purview of medicine and that medical facilities tend to be exclusive and conservative in their choice of whom to help. It is felt that medicine should play a more empowering role of assisting all women, especially since insemination is a procedure that does not need to be "new-tech" or "high-tech" at all.

Safety of Sperm Supply

Whether recipients use donors known or unknown to them, they share concerns about the safety of the sperm. For each group there is a set of concerns related to the fact that the sperm is fresh and not frozen. As

stated, it is impossible to subject the donors of fresh sperm to the same rigorous testing procedures that donors of sperm that will be frozen can be subjected to. The practice in Alberta of checking a potential donor twice, six months apart, before he is accepted as a donor confirms only that he probably was not infected at the time of the first test. The practice provides no certainty about the donor's safety at the time of the second test (which is when he will be donating).

Another difficulty in assuring the safety of sperm supplied is finding medical personnel who are willing to participate in the testing. If a doctor cannot be found who is willing to release the test results (under a code name) of the donor, then the recipients, runners, or procurers are left to simply take the word of the donor(s) that tests were performed and results were negative. In Calgary, lesbian women have access to a cooperative doctor; however, no such doctor is known in other urban centres such as Edmonton and Lethbridge.⁹

Supply Issues

Because the sperm cannot be frozen and stored, the recipients are completely dependent on the good will and continued reliability of the donors. This can act against the self-determination that SI could potentially allow.

One of the biggest difficulties for lesbian women in Alberta is finding donors. As mentioned, it is not uncommon for lesbian women to exist within an almost exclusively female social milieu. Often lesbian women do not know men who might be willing to donate or the men they do know are homosexual and thus considered at high risk for HIV. Nevertheless, many of the donors who have been used in Alberta were, in fact, homosexual men who were used, in part, because they are a group who are most supportive of lesbian women's desire to mother.

Child Support Issues

All the women in the Alberta sample wanted donors to waive any claim to the child(ren) who might result from insemination. They, in turn, agreed that they would never pursue the donor for child support. For some women, using unknown donors offers an advantage in that it would be much more difficult for the donor(s) and recipient(s) to identify each other. (The only person who knows their identities is the procurer/runner.)

One of the procurers of donors in Calgary also noted that sometimes it is the men who are very sympathetic to a woman's desire to parent who would *not* make suitable donors. They are sensitive and caring men who would make excellent fathers and for this reason might not be able to be trusted to maintain their agreements to renounce any and all rights to the offspring.

Issues Related to Donor/Recipient Anonymity

Feelings are mixed regarding the use of contracts to assure the wishes of each party. No such contracts have yet been demonstrated to carry legal weight in Alberta, since none has been tested. The greatest perceived danger in signing a contract is that it identifies the parties and the nature of their involvement with each other. It offers either party proof that he or she has reason to pursue the other for child support or access. There is a feeling that the greatest protection might come from having no sort of legal documentation at all. For this reason, only one of the couples signed a contract with one of their donors, at the donor's request, agreeing never to attempt to learn his identity or pursue him for paternity.

Some women view the anonymity of donors as a disadvantage. For example, the couple who used known donors felt others using unknown donors might miss out on several positive factors: because the donors were close family friends, it was felt they might "be there" if the child were to need, for example, a blood transfusion or kidney transplant; however, the recipients made it clear that the donors never would be obliged to be involved in this way. As close family friends, the donors also would have contact with the child and, perhaps more important to the mothers, the child could have contact with them, albeit as "friends of the family," not as "donors" or "fathers."

The women in this couple felt more comfortable knowing their donors' personal characteristics. They also felt that their affection for and knowledge of the donors might allow them to feel even closer to the child. In terms of her health, the biological mother indicated she felt more comfortable using known donors (whose health and habits she would know personally). She also simply did not like the idea of having a stranger's child growing inside her.

The Social Context of Lesbian DI/SI

Many issues and frustrations that lesbian women encounter in attempting to achieve pregnancy are related to difficulties they face because they are lesbian. The social and attitudinal contexts, what it means to be a lesbian woman and a lesbian woman seeking maternity, are thus relevant to a discussion of lesbian women's experiences with DI/SI.

That lesbian women often are denied access to infertility clinics may indicate that these institutions adhere to an outdated, unrealistic image of "family." For example, a policy of assisting only married heterosexual couples, combined with the costs of the procedures, virtually assures that only such couples will be helped. Unmarried heterosexual couples, single heterosexual or lesbian women, and lesbian couples are not seen as "really" being family and thus deserving of assistance.

Legal Issues Related to Family Forms

The lack of acknowledgment of the lesbian family as an acceptable and valid family form is particularly problematic in the legal arena. Apart from a lack of legislation to protect donors and recipients, the lesbian family also lacks legal recognition. Neither the relationship between the partners nor the non-biological mother's relationship to the child has any existence in law. Thus, for all intents and purposes, the biological mother in a lesbian family is legally a "single mother" and her partner is nothing at all.

What is required, however, is not merely acknowledgment that a lesbian couple and their children constitute a family. A biological mother, a non-biological mother, and their child are not directly analogous to a mother, a father, and their child. This significant point has less to do with genetic ties to the child than with socially created and personally modified parenting roles. Typically, each woman in the couple identifies herself as the child's mother and demands social recognition as such. These roles also are not analogous to "mother" and "step-mother." In contrast with usual Western concepts of motherhood and "women's nature," the mothers tend to be equally primary to the child; mothering duties are, more often than not, evenly shared by the two mothers, with little jealousy or competition for the child's affection or over the division of time and tasks.

This unique family form demands to be understood on its own terms; however, because it is neither understood nor acknowledged, this type of family tends to lack the social supports that often surround the heterosexual family. Since parents often reject their daughters' lesbianism, many lesbian women are only weakly connected to their families. Informing their families that they are having or planning to have children is generally cause for conflict rather than an occasion for the family to joyfully rally around the couple. It does appear, however, that the biological grandparents are somewhat likely to "come around" so they can have access to their grandchildren. As mentioned, the non-biological grandparents tend not to recognize the child as *really* belonging either to them or to their daughter.

Because of such common familial conflict, lesbian families often settle some distance from their own parents, siblings, and other relations. This in itself limits the support that may be made available, even by willing family members. These factors combine to make the network of mostly lesbian friends around the lesbian couple of vital importance. This network is rich in emotional resources and is much relied upon.

Unfortunately, material or financial resources available to the lesbian couple tend to be limited. Because lesbians are women and, in particular, because they are not attached to men, their income levels tend to be lower than men's, even when they are highly educated professionals.¹⁰ This puts lesbian women (and single heterosexual women) at a distinct disadvantage in gaining access to costly medical assistance or purchasing sperm. It also

can make it difficult to support a family, especially when it is compounded by a lack of material support from their social network.¹¹

Conclusions and Suggestions for the Future

Certain issues faced by many lesbian families — lack of social or legal acknowledgment, relative poverty, weak familial supports, and general lack of support from the medical community — reflect a social milieu that is not amenable to the idea of lesbian parenting.

Many doctors and infertility clinics maintain the negative social attitudes that are common regarding lesbian women and treat the lesbian population accordingly. Often the only options left for lesbian women seeking pregnancy are the “alternate” routes of DI and, especially, SI. There are issues and concerns involved with both of these, some of which exist only because the consumers are lesbian women. It appears that the “self-created” lesbian family is an expanding social entity. Changes are needed on several fronts to accommodate this.

Future Access/De-medicalization

The lesbian mothers surveyed feel strongly about the de-medicalization of artificial insemination. They want to end the medical monopoly over access to sperm and assisted insemination. Specifically, they seek medical assistance or cooperation, instead of domination. This would put medical practitioners in the service of their consumers.

De-medicalization also entails ending medical mystification of the insemination procedure. What lesbian women are calling for here is greater availability of information regarding insemination. They disagree with the view that SI, DI, and TDI are complicated and sensitive procedures that can be carried out only by properly trained *medical* personnel. They feel medical practitioners should play an empowering role, share specialized knowledge, and even train women to inseminate themselves and each other.

Freedom of Choice

Underlying the call for de-medicalization is the desire for freedom of choice regarding means of achieving pregnancy. As illustrated, not all of the four couples who used SI would have used TDI; however, several would have at least used DI if they had been able to do so. A related argument is that the availability of Alberta Health Care coverage for any desired medical assistance would help offset the disadvantages of a moderate to low income. What is being sought is a situation where potential mothers can make the decision based on their own criteria, free from the constraints of discriminatory policy or exclusionary practice.

Legislative Changes

Linked to any changes in lesbian women's treatment by the medical establishment are changes in the social and attitudinal context within which both the lesbian family and organized medicine exist. Change must be effected on many fronts, but legislation can be a significant source of change.

What the women interviewed think is required is legal acknowledgment and protection of the couple's bond that is analogous, legally, to the recognition of heterosexual marriage. Also, and for many lesbian mothers more importantly, it entails recognizing and protecting *both* mothers' rights and obligations to the child. Currently in Alberta the only legal recourse a lesbian couple has is for the biological mother to petition the court to grant the non-biological mother "legal guardianship." This can be a time-consuming and arduous process, the results of which are not quite what is desired.

What is being sought by lesbian couples is legislation that would allow the non-biological mother to adopt the child. In this instance both women would be legally recognized mothers, and this would be in keeping with the roles they actually tend to play. The ideal, however, would be to have the sort of legal recognition that is automatically conferred upon fathers at the birth of the child also automatically conferred upon non-biological mothers. One item that might reflect such a change would be birth certificates that would ask for "birth mother" and "co-parent" rather than requiring the names of "mother" and "father." Lesbian couples feel that assuring lesbian women's access to insemination options is only part of the solution required if the non-biological mother still has no rights and the family form remains unrecognized.

Lesbian women feel that legislation is also called for regarding the insemination procedure itself. Lesbian women seek firm, binding legal procedures that would protect all parties involved in the insemination. Specifically, they feel contracts are needed that would stand up in court, prevent the donor from having access to any offspring, and prevent the recipients from pursuing the donor for support. The current situation where both parties are better off if they simply do not put their names on any contract or sign any agreement leaves all involved very vulnerable to each other.

In summary, there is a new family form evolving in Canada with needs particular to it. The availability, limited though it may be, of access to SI, DI, and TDI allows lesbian women to choose to have children within lesbian relationships. Therefore, it is vitally important to understand the experiences of lesbian women with these procedures. Without such information, the understanding of alternate insemination in Canada is incomplete.

Notes

1. The "Alberta sample" refers to this sample, originally gathered for the purpose of thesis research at the University of Calgary. All members of the original sample resided in Calgary, Edmonton, and Lethbridge. There were no rural participants in the study.
2. These profiles are based solely on the women in the Alberta sample. As such they represent summaries of the information gathered about these women's lives.
3. R. Walker, "Fertility Service Won't Bar Singles," *Calgary Herald* (3 November 1990): B1.
4. Correspondence with contacts and sample members indicates that growing numbers of lesbian women (especially in Calgary) are choosing doctor-assisted DI. In June of 1992, the Foothills Hospital in Calgary announced that it would offer TDI to single and lesbian women.
5. Information package from ReproMed Ltd., Toronto.
6. The situation in Edmonton has been conveyed to the researcher through personal correspondence with members of the Edmonton lesbian community.
7. Walker, "Fertility Service."
8. It is beyond the scope of this paper to offer a comparative discussion of vaginal and inter/paracervical insemination. What is relevant here is that the women sampled tend to perceive medically assisted insemination as safer and more efficient.
9. This information was obtained through correspondence with sample members and other contacts in the lesbian communities in these urban centres.
10. In 1990 women's full-time earnings in Canada were equivalent to 67.6% of men's full-time earnings. Canada, Statistics Canada, *Canadian Social Trends* (Spring 1992), 31.
11. What is meant here are the kinds of supplemental items often expected from grandparents and other relatives. Items such as the crib, stroller, clothing, and birthday and Christmas presents may not sustain the child, certainly, but they can make a substantial difference in easing financial pressures on parents.

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Self-Insemination in Canada

Rona Achilles



Executive Summary

This study is an exploratory inquiry into the practice of self-insemination (SI) in Canada. Data was collected from 15 women who have practised self-insemination — nine in a lesbian relationship, four single lesbian women, and two single bisexual women — and from 19 key informants — members of midwives' associations, women's centres, lesbian insemination and reproductive support groups, and individuals. The study looked at the reasons for choosing self-insemination over donor insemination or therapeutic donor insemination, the source of sperm for self-insemination, arrangements with the donors, how self-insemination is performed, success rates, costs, legal issues, and how SI mothers tell their children about their conception.

The study concludes that lack of access to medicalized donor insemination is only part of the reason why some women choose self-insemination. Many respondents desired a different kind of experience than is possible in a medical setting and control over the process of conceiving their child. Many wanted to avoid unnecessary ovulation-regulating drugs and discriminatory attitudes about their ability to parent. Some wanted the opportunity to negotiate arrangements with their sperm donors. Costs of medicalized donor insemination were also a factor. On the other hand, the prospect of well-screened donors, particularly for human immunodeficiency virus (HIV), was reported as a positive feature of medicalized donor insemination.

In view of the health and legal risks identified by this study, it is suggested that a de-medicalized sperm banking system similar to that of the Sperm Bank of California would facilitate both the needs of this population and the societal interest in a healthy reproductive process.

Introduction

This study is an exploratory and largely descriptive inquiry into the practice of self-insemination (SI) in Canada.* The medical practice of donor insemination (DI) or therapeutic donor insemination (TDI), as it is referred to in medical literature, is veiled in secrecy. Although it is essentially a simple procedure, which has been medicalized,¹ little is known about the use of artificial insemination outside medical settings, and even less has been documented. The tendency toward secrecy, and the widespread cultural preference for heterosexual couples as the ideal parents,² have meant that for single women and lesbians, access to DI through traditional medical channels is limited.³ The aura of secrecy that surrounds the medical practice of DI has served to disguise male infertility in heterosexual couples⁴ and to limit public discussion of the important social ramifications of DI.⁵ SI has also been a virtually invisible method of conception.⁶ Available evidence indicates, however, that it is practised increasingly by single heterosexual and lesbian women.⁷

Insemination in humans by means other than sexual intercourse is a technically simple practice that some writers argue has been known for centuries⁸ and can be easily, safely, and effectively undertaken by lay persons.⁹ Self-insemination as a method of conception circumvents sexual intercourse and does not require the physical presence of a male at the place and time of conception. It can be used by any woman but is particularly common among lesbian women and single heterosexual women. As a result, new kinds of families with single mothers or two mothers are being created. Since they eliminate a sexual and romantic relationship between the biological parents of a child, these families are not only different in structure; they also radically alter the *process* of creating families. In this respect these "arranged conceptions" resemble arranged marriages in that they rationalize the process of parenting. The sperm

* A number of terms and acronyms are used in this paper, all of which refer to different types of donor insemination. For the purposes of this study, therapeutic donor insemination (TDI) refers to donor insemination as practised in fertility clinics and by more traditional practitioners. In these settings, TDI is largely understood and practised as a treatment for infertility to be used only with heterosexual couples. Donor insemination (DI) is used in this paper to refer to the practice in non-traditional medical settings (i.e., practitioners who serve clientele rejected from fertility clinics, such as single women or lesbian couples). Self-insemination (SI) is used interchangeably with alternative insemination and refers to insemination with donor sperm without medical assistance. Occasionally, the older term artificial insemination by donor (AID) is used in the literature cited and refers to TDI in the 1980s before the term was changed due to confusion with AIDS (acquired immunodeficiency syndrome).

donor may be completely unknown or known, with varying degrees of intimacy with the child, including sharing parenting equally with the mother or mothers. In some instances a man and woman who are not involved in a sexual relationship may choose to co-parent a child. They may live together or they may live apart.

When children are conceived through sexual intercourse, the interaction is negotiated within the private lives of individuals. In TDI, physicians control the decision over which sperm donor is matched with specific recipients. Recipients and donors are generally unknown to each other. In SI or alternative insemination conception is also negotiated within the private lives of individuals. Donor sperm is used to achieve conception without medical assistance, and individuals must negotiate the relationship with their sperm donor themselves or with the help of an intermediary. There is very little information on the extent of this practice or how and with whom these arrangements occur.

Socio-Legal Context of the Practice of Artificial Insemination

The experience and perception of many single and lesbian women that they will be denied access to DI in medical settings is substantiated by the available medical literature. With a few dissenting voices, most of the medical literature tends to focus on whether single women, that is, women without male partners, should have access to DI in medical settings. As Potter and Knaub point out in their review of the literature on single motherhood by choice (including DI as one reproductive option), the term "single women" may in fact include a number of disparate groups, making comparison of research findings difficult.¹⁰ "Single" is commonly used to denote unmarried, never-married, separated, divorced, or widowed women as well as those in common-law relationships. In addition, because it indicates the lack of a legally recognized marital relationship to a male partner, the term also counts every lesbian woman as single, whether or not she has a partner. A legal marital relationship is used as the primary indicator of what constitutes a "good parent," and therefore it acts as a simplistic determinant of who gains access to the medical practice of DI.¹¹

Reasons for limiting access by single women to DI include concerns about the ability of single women to provide socially and economically for a child, and the effects of an absent father on later sex-role behaviour. If the mother is lesbian, there are fears that the child may become homosexual or stigmatized, and that the mother's homosexual relationship is inherently unstable.¹² Physicians also express concerns that inseminating single women is illegal.¹³ Both Perkoff and Fletcher cautiously argue that DI for lesbians is not unacceptable in individual cases, but express concern about the "potential welfare of the child."¹⁴ Despite an

acknowledgment that available research fails to support their fears, Perkoff concludes that, "since the nature of parenthood is itself subject to considerable uncertainty and disagreement, caution is urged before one concludes that the practice of AID in lesbian couples is without deleterious family or social effects."¹⁵

McGuire and Alexander note that doctors, in deciding whether DI for single women is appropriate, "have expressed concern that the absence of a father may create financial problems ... [and] the lack of male sex-role models could affect the child adversely." However, they argue that research indicates that "children in single head of household families have normal [sic] gender identity, behavior, and partner preference ... [and] do not appear to be psychologically damaged ... by the absence of a father."¹⁶

The medical literature also indicates that women without male partners who want children are often subject to psychological screening and scrutiny regarding their motivation for parenthood. McCartney used "psychiatric interviews" with 12 single applicants for DI (including two lesbians) to assess physicians' perceptions that single women's motivation for DI is "purely selfish" and that they "will be unable to cope with the stresses of parenthood." She concluded that DI "should not be categorically denied to single women."¹⁷ Brewaeys and colleagues assessed lesbian applicants for DI using "the personal histories of both women, the relational patterns of the couple and an analysis of the desire for parenthood." Using "criteria ... based upon the most important findings in the literature," they accepted 21 out of 27 applicant couples during an almost seven-year period.¹⁸ Despite this literature expressing at least guarded approval for accepting single and lesbian applicants, Freedman et al. found that 66 percent of Canadian DI practitioners would reject women without a male partner, and 76 percent would consider lesbians to be unsuitable.¹⁹

In Canada, federal and provincial government advisory bodies have clearly preferred that access to assisted reproduction be limited to married or common-law couples.²⁰ Most have hesitated, however, to recommend legislation that would restrict access by single women. One fear is that such a restriction would violate provincial human rights codes. There is the tendency to rely instead on medical discretion to achieve the same end.²¹ In British Columbia, commissioners in an inquiry on family and children's law urged that single women be required to pass an "ability to nurture" test.²² A Saskatchewan law reform commission relied on the documented heterosexist preferences of the medical profession.²³ The Ontario Law Reform Commission was split on the question of eligibility, with the majority accepting "stable" single women. In Ontario, SI would become the practice of medicine,²⁴ a move that would criminalize users and, therefore, SI.²⁵

Canada is not alone in advocating a restrictive approach. The British Warnock Report would restrict access to couples in a "loving, stable, heterosexual relationship"²⁶ because "as a general rule it is better for children to be born into a two-parent family, with both father and

mother."²⁷ The authors fail to provide "any sound backing for this statement"²⁸ and acknowledge the fundamental weakness of such a test: "we recognise that it is impossible to predict with any certainty how lasting such a relationship will be."²⁹ As Blank points out, "the question of allowing single or lesbian women access to AID has been approached explicitly in few jurisdictions and rejected in virtually all."³⁰

Few jurisdictions have attempted to impose legal restrictions on SI, recognizing that enforcement would be impossible. However, Brazil, Egypt, and Libya prohibit DI entirely. Twenty-one U.S. states require that DI be performed by a physician, with Georgia treating non-compliance as a felony.³¹ Nevertheless, some American legal commentators have argued that restrictions on access to assisted reproduction by single women violate a constitutionally protected right to procreate.³² These commentators advocate an "expanded definition of family" that recognizes in law the reality of lesbian and other non-traditional family configurations.³³ In Canada, restrictions on access for single women have been found to conflict with provincial human rights codes.³⁴

There is an increasing demand for DI by single women,³⁵ and underground networks of women have developed since the early 1970s in Britain, the United States, and Canada to facilitate SI.³⁶ This movement has grown in both numbers³⁷ and sophistication.³⁸ Because of concern by single women and lesbians over possible custody disputes with known sperm donors,³⁹ contracts have been drafted, but remain untested in the courts.⁴⁰ Since knowledge of one's biological parents is socially important in western societies,⁴¹ recent debates about self-insemination have focussed on the possible harmful effect on children of having an unknown, and unknowable, donor-father.

Methodology

Since it would be impossible to systematically survey this population, an exploratory study was undertaken to identify and describe the general features of alternative insemination practice in Canada. The sample consisted of 15 users (defined as women who have practised self-insemination, successfully or not), and 19 key informants (defined as individuals with knowledge about self-insemination practice broader than their own experience). The principal investigator worked with a team of three researchers familiar with the community using alternative insemination — two midwives and one graduate student who had undertaken a smaller study on lesbian parenting. In consultation with these researchers, a key informant list of contacts across Canada was created. Users were contacted by word of mouth and a snowball sampling technique.

The initial key informant list consisted of women's health collectives, women's centres, women's health centres, midwives, midwives' associations, lesbian mothers' support groups, informal groups created solely for support of alternative insemination, individuals who acted as sperm "runners" and/or intermediaries, and physicians who provided an "alternative practice" in donor insemination.⁴² An attempt was made to identify key informants in all the provinces and territories; however, no key informants were identified in Prince Edward Island, New Brunswick, or the Yukon.⁴³

Two interview guides were designed, one for users and one for key informants (see Appendix 1). The guides were pretested and revised in consultation with the researchers. The data-collection period was time-limited, and the final sample is the result of what could emerge during a specific time period. Researchers conducted interviews largely over the telephone, although some travel was involved to northern Ontario and British Columbia. During the period of data collection, many calls were made that were not returned. This was particularly true of calls to physicians: as a result only one physician is included in the sample.

Respondents were included in the sample only if they qualified as a key informant or a user. Many of the initial key informants contacted reported that no self-insemination was occurring in their area, or that there was so little activity (e.g., two calls in two years) that they were not included in the sample. This meant that many calls were made to find one respondent, and the original list of key informants was substantially revised. Researchers estimated that between 10 and 40 calls were made to find four to five respondents, except within their own community, where they were familiar with both key informants and users. An estimated three to four follow-up calls were made to each unreturned call.

A consent form was designed that could be read over the telephone and signed by the researcher (see Appendix 2). In most cases anonymity was a prerequisite to participation in the study. Researchers also reported that many respondents "expressed discomfort with the idea that the information was going to the government" and were concerned about whether "the information could be used against them." This may be a partial explanation for the high number of unreturned calls.

The resulting sample is highly concentrated in Toronto and larger urban areas, with many gaps across the country. No data were collected in Quebec despite informal knowledge that self-insemination occurs, for example, in Montreal. Calls to both the anglophone and francophone communities were not returned or proved fruitless. One lesbian group contacted in Quebec said they "did not believe in motherhood."

In addition, no key informants or users from the Maritimes or Newfoundland were included in the sample. Contacts in these locations said there was no community of women using self-insemination in these areas. One midwife in Halifax had only two calls requesting information about SI over the past two years. In some of the smaller centres, women

contacted expressed interest but no knowledge of SI. It may be, as one researcher commented, that "larger lesbian and 'alternative' communities as well as established gay communities — from whence much of the sperm comes — are in bigger urban centres, so SI ... is more commonly and confidently practised in these settings."⁴⁴ In other words, the concentration of the sample in larger urban areas, particularly Toronto, may reflect the concentration of the practice itself.

A summary grid was created for users and key informants to facilitate a quick review of the main features of the data collected (see Appendix 3). In spite of pretesting, not all questions "worked" in practice, and therefore they were not summarized or analyzed. A question asked of key informants about incidence went largely unanswered since respondents did not feel they could estimate numbers. Those who did answer sometimes overlapped in the same geographic area. Other questions were answered erratically by users and key informants because not every respondent could answer every question, or it was not relevant to her experience or knowledge base. The "n" for each question therefore differs for different questions (see the "Totals" column in the summary grids, Appendix 3).

Results

The Sample

Data were collected from 15 users: nine were in a lesbian relationship, four were single lesbian women, and two were single bisexual women at the time of the insemination. There was a total of 15 children (with a sixteenth due June 1992) whose ages ranged from one and one-half to six years (at the time of the survey). All users included in the sample had used self-insemination. Two had been unsuccessful — one due to infertility and one due to a shortage of donors. The latter had subsequently used DI successfully but is included in the sample as an SI user since she is articulate about her reasons for using both.

Data were collected from 19 key informants. These individuals were members of midwives' associations (2), women's centres (3),⁴⁵ informal lesbian insemination support groups (3), slightly more formal organizations formed for support around reproductive or parenting issues (e.g., "Dykes and Tykes," "Single Mothers by Choice," and a group, now disbanded, called the "Lavendar Conception Conspiracy") (3), individuals acting on their own as sperm "runners" (6), and one researcher and one physician providing DI through Repromed, a Canadian sperm bank.

Most key informants became involved in assisting other women through their own or their partners' use of SI/DI. Their roles included providing information, support, counselling, finding donors, assisting with medical screening of donors, arranging the insemination, transporting sperm, and explaining the process to male donors. Key informants

contacted had been involved in SI/DI for a mean of seven years (range one and one-half to twelve years). The researcher became informed about SI through graduate studies on self-insemination among lesbian women, and the physician became involved in DI to "take a stand" against the local fertility clinic, which refused to inseminate single or lesbian women.

Reasons for Choosing SI over DI or TDI

Users gave a range of personal, practical, and political reasons for choosing self-insemination. There was consensus that insemination does not require medical intervention. One woman was "repulsed at the thought of lying on the table" to conceive. Self-insemination was reported as necessary to avoid unnecessary drugs, homophobia, or having to justify one's right to parent through psychological testing. One user was asked by a physician for reference letters concerning her ability to parent. Another was asked to write a 3 000-word essay entitled "Why I Want to Be a Mother and Why I Would Be a Good Mother." In most areas surveyed, except Toronto and Saskatoon, access to TDI was perceived as being limited to married heterosexual women, or no services were available that did not require travelling great distances. The cost of both TDI and DI was considered to be prohibitive.

Central to the concerns expressed by users and key informants was the issue of having more control over the process. Dominant among these concerns was the ability to negotiate different arrangements with the donor. The ability to "choose the donor," control the amount of information available about him, and arrange for different relationships with the child were all stated as important.

Overall, key informants reported the same reasons as users for the choice of SI over DI or TDI. However, their concerns were usually articulated in a political rather than a personal voice. More control over the process was a repeated reason for choosing SI. A woman's right to choose was a recurring theme among key informants, as was respect for her choices. DI, states one key informant, "is not medical procedure" and she "disagrees with limitations on access imposed by the medical profession ... it can and should be controlled by the women involved ... this is very similar to the reasons why women use midwives to give birth ... midwives support women's choices." Overall, key informants were better informed about access to DI or TDI in their areas — that is, about available medical options and doctors who are sympathetic. Users were more likely to see medical settings as closed to them.

Users reported they might choose DI or TDI if donors couldn't be found, if donors proved unreliable, if it took too long to get pregnant, or if the donor was getting tired of the process. Fear of acquired immunodeficiency syndrome (AIDS) was also stated as a major reason for choosing a medical setting. Of course, all these reasons were contingent on access to medical settings. One respondent had accessed DI through

a physician who was a friend ("He did it for me. He wouldn't do it for anybody else."). Only a very small number of users (3/15) said they would prefer to use medical DI if it were available. In contrast, one-half of key informants estimated that women would use a medical route for donor insemination if it were available — the dominant reasons reported for this were well-screened sperm and easier access to donors.

The biggest problems in the provision of SI services reported by key informants were finding reliable donors who will agree to medical screening and to committing to the process of insemination (which might be lengthy), and finding volunteers to act as sperm "runners." The majority (13/16) said they would help anyone who requested assistance; however, 3 of the 16 had refused services. One refusal was based on the perception that one woman was "mentally ill" and "had not considered the consequences of motherhood." Another key informant did not help heterosexual women, on principle. Others reported they were not able to provide services in some instances because donors were not available.

The Source of Sperm

Among the 15 users surveyed, one-third had used a male friend as a donor (5), most had found their donors through friends (7) or intermediaries (2), and one had used DI due to a shortage of donors. All users responding to this survey, including the woman using DI (in 1985), used fresh sperm.

Users and key informants consistently reported that it is "difficult to find donors." With the exception of sperm "runners," most key informants did not consistently get involved in finding donors. Most acted as information resources and reported that "women find their own donors." Occasional involvement in finding donors occurred through a "loose network of supportive men," and "word of mouth." In one instance, a woman advertised in a newspaper and interviewed potential donors for over a year before she eventually found a man with whom she now co-parents their daughter. Key informants reported that frozen sperm was ordered through Repromed, the University of Saskatoon, the California Sperm Bank, and an unnamed U.S. sperm bank — all with the help of "friendly M.D.s." One key informant knew of a group of women in a small Ontario city with their own CO₂ tank for freezing sperm.

Arrangements with Donors

In most cases (12/15), users reported that the sperm was transported from the donor to the woman by an intermediary — a "runner" or a "friend." Sperm was carried in a "sterile container" (in one instance an "artichoke jar," which the respondent wishes she had kept for sentimental reasons) inside a sock and kept warm through body heat. In two cases, the donor dropped off the sperm, or it was picked up by the woman's partner or by the user herself. In one instance, a physician was the intermediary.

Most users (9/15) chose unknown donors, and 6/15 chose known donors. Reasons given for choosing unknown donors were largely a fear of legal complications, the need for clear family lines (rather than an "extended" family) and wanting to parent the child alone. Reasons given for choosing known donors were based on concerns about the health and well-being of the child both psychologically (so the child could meet the biological father later in life) and medically (should the need arise for a blood transfusion or for complete genetic information). Some respondents reported they just felt more comfortable knowing the identity of the donor.

Users reported that donors only occasionally requested information about recipients of sperm. Most knew the recipients were a lesbian couple. A few requested more information about the health of the child, race of the parents, and parents' financial security. Respondents were interested in the race, health, "mental stability" (defined in unknown donors as wanting no further contact), and in some instances the matching of physical characteristics to recipients. In one case, recipients were more specific; they were looking for a donor who was "fertile — [had] low alcohol consumption, low smoking, didn't eat a lot of red meat, healthy — limited past drug use, heterosexual, generally of good health, intelligent, attractive, creative, athletic, not too tall. Eastern European ethnic background, blond or red hair (lower priorities)." Fortunately, they had a known donor! In most cases, recipients indicated that due to the shortage of donors there was usually not a lot of choice. Key informants echoed the responses of users on this issue, noting that seeking a donor of the same race was the most consistently chosen trait.

Key informants paralleled the responses of users concerning arrangements with donors, but in more general terms. Arrangements were reported as being highly dependent on the woman's wishes (in some cases the donor's wishes) and possibly changing over time, depending on the situation. The overwhelming theme is the preservation, for all parties concerned, of the right to choose how to conduct this process, and this varies with different situations. The woman's choice is always honoured.

One key informant reported that to preserve a genetic link women are increasingly using a male relative of their (female) partner. In some instances, known donors play co-parenting roles and there are some instances where (female) partners of sperm donors express discomfort with the situation. The woman's choice is always honoured, key informants reported. Occasionally, circumstances such as the donor's wishes might alter the user's original preference — for example, the donor may desire some contact with the child. However, users do only what they are comfortable with. Similar to the responses of users surveyed, key informants reported that donors occasionally want general information about recipients, such as their parenting skills and/or their ability to provide for a child. In general, they do not seem concerned with the identity or more specific characteristics of the recipients.

The Practice

Ovulation was determined by users through a combination of basal body temperature, temperature charting, testing of mucus, and calendar calculations. Two users reported using ovulation prediction kits. Five respondents commented that they were "aware of ovulation" through body indicators such as "ovulation pain" ("mittelschmerz").

About one-half of users had some form of counselling about insemination, i.e., fertility awareness, or about the insemination procedure. This was acquired through peer support, midwives, or other self-help resources. Most respondents were part of a community in which other women were also using self-insemination. About one-third of the women surveyed said they felt no need for counselling of any type because they were surrounded by other women doing the same thing. One respondent commented that support and counselling about parenting was the real challenge, not getting pregnant.

Descriptions of the procedure were very similar. Typically, sperm was inserted into the vagina with a sterile syringe (in one case with a children's medicine dispenser). Contrary to the popular image, no turkey basters were used. In some cases a diaphragm or cervical cap was then inserted to keep the sperm in place and the woman rested for about half an hour with her hips elevated. The procedure was described in practical terms. Users reported that early "romantic" feelings quickly dissolved with repeated tries.

Screening of donors was reported as partial but compares favourably with the screening of donors in medical settings during the same time period. A U.S. survey conducted in 1987 reported that fewer than one-half of the physicians surveyed tested donors for human immunodeficiency virus (HIV) antibodies. There are no comparable Canadian studies.⁴⁶ About one-half of the respondents had donors tested for HIV, and only three of these retested the donor after six months. However, about one-half of the respondents had children four years of age and older at the time of the study. This would mean that the children were conceived before 1988, when Canadian guidelines recommended using only frozen sperm from a donor who had been retested for HIV after six months.⁴⁷ Slightly more than half reported screening for other sexually transmitted diseases (STDs) and genetic disorders. Medical histories were done by the majority (12/15). (A sample medical history form is included in Appendix 4.) Since the questions were not specific on these issues, it was likely that some genetic histories were undertaken as part of medical histories. This screening information was usually reviewed by the user (10/15), and in some instances, records were kept by the user (5/15) or by an intermediary (3/15).

Key informants' reports were identical to the users' reports on the method of determining ovulation and the description of the insemination. Approximately one-half of key informants provided counselling for users

and four provided counselling for donors. Many key informants (midwives' associations, lesbian support groups) saw their main role as providing support and information. Self-help networks and peer groups were reported as effective supports.

Screening of donors was reported by key informants as varying widely, similar to reports of users on this issue. Key informants, however, also commented that screening was dependent on the risk perceived by the donor — i.e., only gay men would be tested for HIV. Although a majority reported they consistently screened for HIV, only half retested the donor six months later. The fact that key informants were more likely to be reporting about current practice may account for their higher numbers of HIV screenings; users, who reported their own experience, could have been referring to inseminations up to eight years ago. Other STDs were less likely to be screened for. Medical histories were reported as undertaken in a majority of cases (14/18) with genetic screening in less than half (7/18). Again, the lack of specificity in these questions may mean that general questions about genetic disorders were asked as part of a medical history. Key informants reported that, in general, records were not kept. Occasionally, medical histories were kept by users (4/19).

A majority of key informants reported that donors may biologically father more than one child, often to the same woman or her partner. Measures to limit the number of children born to a donor are largely regulated by the donor himself. These self-imposed limits are often due to the inconvenience and practical constraints of donation and a discomfort with having many unknown offspring. No donor in this sample had fathered more than two children; when two children were fathered it was usually for two women in a couple who wanted the children to be biological siblings. The only woman in this sample who was uncomfortable with the number of children fathered by a donor had used medicalized donor insemination.

Success Rates

Users report a mean of 2.9 months to achieve pregnancy, with a range of one to six inseminations a month. The majority (11) reported one or two inseminations a month. Two women experienced "several miscarriages," but within six insemination cycles, 12 out of 15 conceived pregnancies that they carried to term. Key informants reported a similarly high success rate, estimating that the average pregnancy rate is three insemination cycles and that an average of 89 percent eventually achieved pregnancy through self-insemination. This is a very fertile population with a high awareness of fertility; however, to some extent, the study itself may self-select successful insemination users.

Costs

Both users and key informants reported similar minimal or token costs associated with self-insemination. Donors are not typically reimbursed in any way. Three key informants did report "token" payments to donors to make the "donation" a "legal sale," or as "gifts" or "gas money." The user will occasionally pay for HIV testing. Other costs reported were "ovukits" (kits available for determining ovulation through a urine test) or the cost of frozen sperm if a sperm bank was used.

Legal Issues

Legal issues were reported as a major concern by both users and key informants, although no legal disputes have occurred to date in the population surveyed. Two users had written legal contracts initiated by the donors, and four had verbal agreements that the donor would have no parenting role. Most had no contract and relied on the anonymity of the donor to protect them from legal complications. One user reported being advised not to use a legal contract since "nothing in writing" was perceived as a protection, and the lack of a contract allowed for denial of the involvement. Most users relied on a "clear understanding with the donor" and the anonymity of the donor as protective measures.

About half of the key informants knew of situations where legal contracts were used, but reported that having "nothing in writing" was a more common response. Those who used contracts were moving toward making the donation a business transaction with an exchange of token payment, i.e., "selling sperm for bagels." A further protection mentioned by one key informant was not having the donor's name on the birth certificate. One key informant identified concern regarding legal issues as the main reason for women's turning to medicalized donor insemination. Legal issues involved with co-parenting by the non-biological mother in a lesbian relationship were also reported as major concerns with self-insemination.

Telling the Children

All of the mothers surveyed were dealing openly with the conception of their children through donor sperm. A variety of stories expressing different attitudes toward this unique reproductive option were detailed — for example: "A generous person gave me sperm to put into the ovum and create them." One user whose partner used the same donor provided this story: "We got sperm from a man and put it in each other because we really wanted them to be siblings." School-age children were reported as beginning to ask more questions: "She asks all the time now that she has started school. She knows she doesn't have a father ... knows how babies are born ... [I] tell her she's lucky to have two moms." Several expressed the importance of not using the term "biological father" — "A father is a person who is involved in a person's upbringing," and "genetics does not a

father make." Others with known donors appeared to encourage interest in the donor and arranged visits with him. Many users reported that their children were friendly with other children conceived in the same way who had "two moms."

Conclusions

The population surveyed does not want to have intercourse with a male for the sole purpose of having a child and does not fit the perceived medical profile for recipients of sperm in DI or TDI programs. Lack of access to medicalized donor insemination, however, is only part of the reason why some women choose self-insemination over medical settings for DI. Both the users of self-insemination and key informants surveyed reported a strong desire for a different kind of experience than is possible in a medical setting. Self-insemination is about control over the personal and private process of how and with whom one conceives a child. Women choosing self-insemination want to avoid the unnecessary use of drugs to regulate ovulation as well as discriminatory attitudes about their ability to parent, which might necessitate psychological testing. Some want the opportunity to negotiate different arrangements with their sperm donor. Costs of medicalized DI were also reported as prohibitive. Both users and key informants rejected the idea that this is a process requiring medical intervention.

The prospect of well-screened donors, particularly for HIV, was reported as a positive feature of medicalized DI. Donors are difficult to find; one respondent gave up on self-insemination for this reason and eventually conceived with DI. Individuals and informal networks across the country are actively assisting in the search for sperm donors. These networks are frequently short-term commitments, however, and cannot meet the ongoing needs of this population.

This population would benefit from a de-medicalized sperm banking system similar to a model developed by the Sperm Bank of California. In this system, clients may bring their own donor or choose a donor from a catalogue of selected characteristics. Included among the options are donors who have agreed to meet their DI offspring at age 18. Other services include fertility awareness, physical examinations, and counselling about choosing a donor and about the insemination process. Clients not in the geographic region or who are unwilling to travel must work directly with a physician who registers with the sperm bank. Legal issues, of particular concern to single and lesbian women, could easily be addressed through such a system.

Conception by self-insemination, like conception through sexual intercourse, is negotiated in the private lives of individuals without the assistance of the medical profession. Like the arrangements (or lack of

arrangements) between women and men conceiving through sexual intercourse, the arrangements made by SI users and donors vary according to the wishes and circumstances of the individuals involved. Users of SI value the ability to control and make choices about this process. However, users of SI face problems with access, adequate screening of donors, and legal issues. The establishment of a more open and accessible sperm banking system could facilitate the needs of this population by maximizing their choices as well as facilitating the collective social interest in healthy reproductive processes.⁴⁸

Appendix 1. Interview Guides

DI Alternate Access User/Consumer Interview Guide

Interviewer _____ Date _____

Contact/Code _____ Place _____

Number of children through SI/DI _____

Age and Sex _____

1. a) Why did you use SI/DI rather than TDI?
[Wait for their response first — in their own words is better — if they are stuck, try the check list]

- | | |
|---|--------------------------|
| 1) access limited to married heterosexual women | <input type="checkbox"/> |
| 2) discomfort with medical settings | <input type="checkbox"/> |
| 3) more control over the process | <input type="checkbox"/> |
| 4) avoid drugs and medical procedures | <input type="checkbox"/> |
| 5) more personal | <input type="checkbox"/> |
| 6) cost | <input type="checkbox"/> |
| 7) psychological screening | <input type="checkbox"/> |
| 8) other | <input type="checkbox"/> |

- b) Do you know of situations where women might start with SI and move on to DI or TDI? If so, what were their reasons?

2. Would you use a medical route for DI if you knew you could get access to it?

3. How did you find your donor?

4. Is it hard to find donors?

5. If frozen sperm is used where do you get it?

6. What kinds of arrangement(s) were made with donors?

a) arrangements to pick up the sperm

b) contractual or legal arrangements

c) other

7. Is your donor known or unknown to you?

8. a) Did your donor (if anonymous) request any information about you?

- b) If so, was he given any?

- c) What characteristics were you looking for in a donor?

9. Did you choose a known or an unknown donor?

Why?

10. a) Are records kept? _____

- b) By whom? _____

- c) Where? _____

- d) In what detail?

11. How was the sperm transferred from the donor to you?

12. How did you determine when you were ovulating?

13. Please describe the insemination procedure.

14. Were any other kinds of supports provided to you — such as counselling or fertility awareness?

By whom?

15. Are the donors screened for:

Age	<input type="checkbox"/> YES	<input type="checkbox"/> NO
HIV	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Re-tested 6 mo. later	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Other STDs	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Genetic problems	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is a medical history taken?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

16. What happens to this information?

17. a) Do you plan or want more children?

b) Would you use the same method?

c) If so, would you or could you use the same donor?

18. About how long (number of inseminations per month, and number of months) did it take to get pregnant?

19. Were there any costs involved? Did the donor, for example, get paid? Does anyone else get paid for their services?

If so, how much?

20. What have you told, or what do you intend to tell, your child(ren) about their conception and/or their biological father?

21. If your child(ren) know about their origins how are they faring with this information?

22. If your donor is known to you, what is their relationship to your child?

23. Are there any precautions taken in regards to legal issues? If so, what issues and what precautions?

24. Could we have samples of any written materials such as screening sheets, consent forms, agreements?

25. Were you at the time of the insemination:

- | | |
|---------------------------------|--------------------------|
| In a lesbian relationship? | <input type="checkbox"/> |
| Single woman (lesbian)? | <input type="checkbox"/> |
| Single woman (heterosexual)? | <input type="checkbox"/> |
| In a heterosexual relationship? | <input type="checkbox"/> |

DI Alternate Access Key Informant Interview Guide

Interviewer _____ Date _____

Organization _____ Contact/Pseudonym _____

Individual Contact/Code _____ Phone No. _____

Address _____

Role in SI/DI _____

When (timeframe of inseminations) _____

Note: This interview schedule is intended as a guide for interviews and may be adapted to different situations.

"Alternate access" is a term used here to describe both SI and DI as defined below. Questions may refer to SI practice, DI practice or both.

For the purposes of this research the following terms are defined as follows:

SI — self-insemination — insemination with donor sperm with no medical assistance.

DI — donor insemination as practised in non-traditional medical settings (e.g., practitioners who serve clientele rejected from fertility clinics and/or may have a predominantly lesbian practice).

TDI — therapeutic donor insemination — DI as practised by fertility clinics and in other traditional medical settings (e.g., high-volume office-based practitioners and small office-based settings).

A. GENERAL DESCRIPTION

1. a) Please describe your role in, and/or knowledge of, self-insemination/donor insemination.

- b) How long have you been involved with SI/DI?

- c) How did you initially become involved?

- d) Approximately how many inseminations have you assisted with?

B. ACCESS

2. a) Why do you, or the women you know, use SI/DI rather than TDI?
 [Wait for their response first — in their own words is better — if they are stuck, try the check list]

 - 1) access limited to married heterosexual women ☐
 - 2) discomfort with medical settings ☐
 - 3) more control over the process ☐
 - 4) avoid drugs and medical procedures ☐
 - 5) more personal ☐
 - 6) cost ☐
 - 7) psychological screening ☐
 - 8) other ☐
- b) Do you know of situations where women might start with SI and move on to DI or TDI? If so, what were their reasons?

3. Would the women you know using SI, use DI or TDI if they could get access to them?

Why or why not?

4. Is there ever a problem of providing SI/DI for every woman who wants it?

If so, why?

5. a) How do you decide whom to help and whom not to help?

- b) Have you ever had to refuse anybody SI/DI services?

- c) If so, why?

- d) About how many?

C. SOURCE OF SPERM

6. How do you find your donors?

7. Are there problems finding donors?

8. If frozen sperm is used where do you get it?

D. THE ARRANGEMENT

9. What kinds of arrangements are made with donors?

a) arrangements to pick up the sperm

b) contractual or legal arrangements

c) other

10. a) Are the donors known or unknown to the woman wanting to get pregnant?

- b) Do the donors ever request any information about the woman or couple?

- c) Are the donors given any information?

11. Does the woman (receiving sperm) have a choice about whether the donor is known or unknown to her?

12. Is her choice always honoured?

13. a) Are records kept? _____

- b) By whom? _____

- c) Where? _____

- d) In what detail?

14. How is the sperm transferred from the donor to the woman being inseminated? (Be specific — by whom, how, in what?)

15. a) How is ovulation time determined?

b) Is ovulation ever regulated through fertility drugs?

☐ NO ☐ YES

c) If yes, when?
Routinely, before beginning insemination?

☐ NO ☐ YES If yes, why? _____

Or, after how many cycles?

_____ # of cycles

16. Please describe the insemination procedure.

17. Are other kinds of supports provided — such as counselling or fertility awareness?

For the woman being inseminated

For the donor

E. SCREENING

18. Are the donors screened for:

Age	<input type="checkbox"/> YES	<input type="checkbox"/> NO
HIV	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Re-tested 6 mo. later	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Other STDs	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Genetic problems	<input type="checkbox"/> YES	<input type="checkbox"/> NO
Is a medical history taken?	<input type="checkbox"/> YES	<input type="checkbox"/> NO

19. What happens to this information?

20. Are donors ever chosen for:

	NEVER	USUALLY	ALWAYS
Intelligence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical Appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Race	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hobbies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Talents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. a) Do donors ever father more than one child through SI/DI?

☐ NO ☐ YES How many? _____

b) If so, are there any measures taken to regulate the number of children fathered by one donor?

c) If so, what is the maximum number per donor?

22. How many women are using SI/DI in your area?

23. How many donors are there that you know of?

24. About what proportion of women using SI/DI eventually achieve pregnancy?

25. About how long (number of inseminations a month, and number of months) does it usually take for a woman to get pregnant?

26. Are there any costs involved? Does the donor, for example, get paid? Does anyone else get paid for their services?

If so, how much?

27. Are there any precautions taken in regard to legal issues? If so, what issues and what precautions?

28. Could we have samples of any written materials such as screening sheets, consent forms, agreements?

Appendix 2. Consent Form

Self-Insemination/Donor Insemination Study

Information About the Study

This is an exploratory study of self-insemination and donor insemination as it is practised outside of medical settings. This information is being gathered for a report for the Royal Commission on New

Reproductive Technologies. You will be asked questions about your role in, and/or knowledge of, self-insemination and donor insemination. We are attempting to compile a profile of SI and DI across Canada by interviewing various people like yourself.

If you wish, we can assure you of confidentiality and anonymity. Your name will not be used on any written materials or in any discussion about this research.

You are not obliged to answer any questions that you are not comfortable with and you are free to withdraw from the study at any time. The interview conducted in person or over the telephone should take no more than one or two hours.

Consent

I agree to participate in this study. I have read the above and understand that this is an exploratory study designed to obtain descriptive information about donor insemination and self-insemination as practised outside of traditional medical settings.

I also understand that:

- 1. Participation in this study will involve one interview either in person or over the telephone for about one to two hours.
- 2. If it is my wish, I will not be identified in any way in the research materials, written report, in discussion, or in any published material.
- 3. All of the material I provide will be held in confidence.
- 4. I am free to withdraw my consent to participate in this study at any time.
- 5. I am under no obligation to answer questions that I am uncomfortable with.
- 6. I wish to remain anonymous in this study. ☐ YES ☐ NO
- 7. I wish to be identified by name in this study. ☐ YES ☐ NO

Date

Signature

If the interview is being conducted over the telephone the above points have been covered and understood.

Date

Signature

Appendix 3. Summary Grids

Table 1. Summary Grid of Users (n = 15)

	Location					Total
	Other parts of		Saskatoon	Calgary	British Columbia	
	Toronto	Ontario				
	7	2	1	3	2	15
Reasons for choosing SI						
Access limited to married heterosexual women	2	2	—	2	—	6
Discomfort with medical settings	7	2	—	1	—	10
More control over process	7	2	—	1	1	11
Avoid drugs/medical procedures	6	2	—	—	—	8
More personal	6	2	—	—	—	8
Cost	5	2	—	1	—	8
Psychological screening	4	2	—	—	1	7
Other	1	—	1	1	—	3
Reasons for choosing DI (if available)						
Trouble maintaining donors (after trying for several months)	3	1	—	—	—	4
No success (after 6-8 months)/ suspect fertility problems	2	1	—	—	1	4
Donor not available (or unreliable)	2	—	—	2	1	5

Table 1. (*cont'd*)

	Location					Total
	Other parts of				British	
	Toronto	Ontario	Saskatoon	Calgary	Columbia	
	7	2	1	3	2	15
Concern about AIDS	—	—	1	—	—	1
Source of sperm						
Fresh	7	2	1	3	2	15
Frozen	—	—	—	—	—	0
How donor found						
Friend/ acquaintance as donor	3	—	—	1	1	5
Clinic/doctor	—	—	—	—	1	1
Intermediary (friends, personal referrals)	4	2	1	2	—	9
Hard to find donor?						
Yes	6	1	1	2	1	11
No	1	1	—	1	1	4
The arrangement						
Donor						
Known	4	—	—	1	1	6
Unknown	3	2	1	2	1	9
Arrangement to get sperm						
Intermediary pickup	7	2	1	2	—	12
Met donor	—	—	—	—	1	1
Donor delivered	—	—	—	1	—	1

Table 1. (*cont'd*)

	Location					Total
	Toronto	Other parts of Ontario	Saskatoon	Calgary	British Columbia	
		7			2	
Clinic	—	—	—	—	1	1
Contractual/legal arrangement						
Oral	2	1	—	—	1	4
Written	—	—	—	2	—	2
None	4	1	1	1	1	8
Relationship of donor to child						
None	1	—	—	—	1	2
Friend/uncle	3	—	—	1	—	4
Identifying information available	—	—	—	—	—	0
Co-parent	—	—	—	—	—	0
Not applicable (unknown donor/ unsuccessful)	3	2	1	2	1	9
Did donor request information on recipients?						
Yes	—	—	1	2	—	3
No	1	1	—	—	1	3
Don't know	2	—	—	—	1	3
Already knew recipients	4	1	—	1	—	6

Table 1. (*cont'd*)

	Location					Total
	Other parts of				British	
	Toronto	Ontario	Saskatoon	Calgary	Columbia	
	7	2	1	3	2	15
Characteristics preferred in a donor						
Healthy	5	2	1	3	2	13
Physical appearance	—	—	1	—	2	3
Same race	4	1	1	1	2	9
Hobbies	—	—	—	—	—	0
Interests	—	—	—	—	—	0
Talents	2	—	—	—	1	3
Other						
Fertile	—	—	—	—	1	1
Heterosexual	1	—	—	—	1	2
No genetic problems	—	1	—	1	—	2
Mental stability	1	—	—	1	—	2
Good person	2	—	—	—	—	2
HIV-negative	1	—	—	1	—	2
Intelligent	—	—	—	—	2	2
Friend	—	—	—	1	—	1
Anonymous	3	—	—	—	—	3
Method of determining ovulation						
Temperature	3	2	1	3	2	11
Mucus	4	1	1	1	—	7
Predictor kit	—	—	—	2	—	2

Table 1. (cont'd)

	Location					Total
	Other parts of		Saskatoon	Calgary	British Columbia	
	Toronto	Ontario				
	7	2	1	3	2	15
Calendar	5	2	—	—	1	8
Ovulation pain/awareness	4	—	—	1	—	5
Were donors screened for:						
Age	—	—	—	—	1	1
HIV	4	1	—	3	—	8
Re-tested six months later	2	—	—	1	—	3
STD	5	1	—	3	1	10
Genetic problems	4	2	—	1	1	8
Medical history taken	6	2	—	2	2	12
Success rate						
Number of women with live births after six insemination cycles	7 of 7	2 of 2	0 of 1	2 of 3	1 of 2	12 of 15
Telling children						
Intend to tell/have told	7	2	—	3	2	14
Don't intend to tell	—	—	—	—	—	0
Status (at time of insemination):						
Lesbian						
Relationship	3	—	1	3	2	9
Single	3	1	—	—	—	4

Table 1. (*cont'd*)

	Location					Total
	Toronto	Other parts of Ontario	Saskatoon	Calgary	British Columbia	
	7	2	1	3	2	
Heterosexual						
Relationship	—	—	—	—	—	0
Single	—	—	—	—	—	0
Bisexual						
Relationship	—	—	—	—	—	0
Single	1	1	—	—	—	2

Table 2. Key Informant Grid (n = 19)

		Location							Total
		Toronto	Other parts of Ontario	Saskatoon	Vancouver	Other parts of B.C.	Calgary	Winnipeg	
		8	2	1	3	1	3	1	19
Role in SI/DI									
	Midwives' association	2	-	-	-	-	-	-	2
	Women's centres	1	1	-	-	-	-	1	3
	Informal support group	1	1	-	1	-	-	-	3
	More formal parenting and reproductive support group	2	-	1	-	-	-	-	3
	Individual runner	1	-	-	2	1	2	-	6
	Researcher	1	-	-	-	-	-	-	1
	Physician	-	-	-	-	-	1	-	1
Reasons for choosing SI									
	Access limited to married heterosexual women	6	1	1	1	-	2	1	12

Table 2. (cont'd)

	Location					
	Toronto	Other parts of Ontario	Saskatoon	Vancouver	Other parts of B.C.	Total
	8	2	1	3	1	19
Discomfort with medical settings	8	2	-	-	-	13
More control over the process	7	2	-	1	1	14
Avoid drugs/medical procedures	6	2	-	-	-	9
More personal	7	2	-	-	-	10
Cost	7	2	-	-	-	11
Psychological screening	5	2	-	-	-	10
Other						
Avoid homophobia	2	1	-	-	-	3
Screen donors	1	1	-	-	-	3
DI not available	2	1	1	-	-	4
Reasons for choosing DI (if available)						
Hard to maintain donor (after one year)	2	1	-	-	-	3

Donor unreliable/not available	2	-	1	1	-	-	5
Concerns about AIDS	2	-	-	-	-	-	2
SI unsuccessful/fertility problems	3	1	-	1	-	-	5
Want screened donors	1	-	-	-	1	-	2
Want doctor to do it	-	-	1	-	1	-	2
Want anonymity	-	-	1	-	1	-	2
Source of sperm							
Fresh	8	1	-	3	1	3	16
Frozen	3	1	-	2	-	1	7
How donor found							
Recipient supplied donor	1	-	1	1	-	3	6
Support groups	1	-	-	-	-	-	1
Sperm bank	1	-	-	1	-	1	3
Word of mouth	3	1	-	2	-	-	6
Through friends/personal networks	5	1	-	1	1	1	9
Ads in gay papers	3	-	-	-	-	-	3
Medical clinic	1	-	-	-	-	-	1
Other users	1	-	-	-	-	-	1

Table 2. (cont'd)

		Location							Total
		Toronto	Other parts of Ontario	Saskatoon	Vancouver	Other parts of B.C.	Calgary	Winnipeg	
		8	2	1	3	1	3	1	19
Are donors difficult to find?									
Yes		7	1	1	3	1	2	—	15
No		—	—	—	—	—	—	—	0
Are donors									
Known to recipient		3	—	1	3	1	—	—	8
Unknown		5	1	1	3	1	3	—	14
Varies with recipient's preference		3	—	—	—	—	—	—	3
How did recipient get sperm?									
Donor delivered		4	—	1	2	1	—	—	8
Runner/provider delivered		7	1	1	3	1	2	—	15
Contractual or legal arrangements with donor									
Oral		5	—	—	1	—	1	1	8
Written		4	—	1	1	—	2	1	9

Do donors request information on recipients?									
Yes	5	1	1	2	1	1	1	—	11
No	1	—	—	—	—	—	—	—	2
Are records kept (on donor)?									
Yes	1	—	—	1	—	—	—	—	2
No	4	—	—	1	1	1	3	—	9
Medical information only	3	1	—	—	—	—	—	—	4
Method of determining ovulation									
Temperature	6	1	1	2	1	1	2	—	13
Mucus	2	1	1	1	1	1	—	—	6
Calendar	6	—	—	1	—	—	—	—	7
Predictor kit	5	1	—	2	—	—	3	—	11
Ovulation awareness	5	1	—	—	—	—	—	—	6
Support provided for recipient									
Counselling/information	5	2	1	1	1	1	2	—	12
Peer group support	1	1	—	1	1	1	2	—	6
Referral	—	—	—	—	—	—	1	—	1
Support provided for donor									
Information/counselling	3	—	—	—	—	—	1	—	4
Referral	1	—	—	—	—	—	—	—	1

Appendix 4. Sample Medical History Form

Thank you very much for providing the following important medical information.

Age _____ Height _____ Weight _____ Blood type _____

Do you or your parents have, or have you or they had: (Read each item and check answer below.)

	SELF		PARENTS	
	Yes	No	Yes	No
Cardiovascular:				
Shortness of breath on exertion	_____	_____	_____	_____
High blood pressure	_____	_____	_____	_____
Hardening of arteries	_____	_____	_____	_____
Dizziness/fainting	_____	_____	_____	_____
Chest pain/pressure	_____	_____	_____	_____
Leg cramps	_____	_____	_____	_____
Varicose veins	_____	_____	_____	_____
Heart murmur	_____	_____	_____	_____
Heart attack	_____	_____	_____	_____
Gastrointestinal:				
Indigestion	_____	_____	_____	_____
Hemorrhoids	_____	_____	_____	_____
Gastric ulcers	_____	_____	_____	_____
Frequent nausea/vomiting	_____	_____	_____	_____
Difficulty in swallowing	_____	_____	_____	_____
Painful urination	_____	_____	_____	_____
Pain in testicles	_____	_____	_____	_____
Blood or other discharge	_____	_____	_____	_____
Kidney disease	_____	_____	_____	_____
Respiratory:				
Persistent cough	_____	_____	_____	_____
Sore throats	_____	_____	_____	_____
Hay fever	_____	_____	_____	_____
Nosebleeds	_____	_____	_____	_____
Asthma/wheezing	_____	_____	_____	_____

	SELF		PARENTS	
	Yes	No	Yes	No
Pneumonia	_____	_____	_____	_____
Pleurisy	_____	_____	_____	_____
Bronchitis	_____	_____	_____	_____
Frequent colds	_____	_____	_____	_____
Frequent sinus infections	_____	_____	_____	_____
Emphysema	_____	_____	_____	_____
Skin:				
Hives	_____	_____	_____	_____
Rashes	_____	_____	_____	_____
Moles	_____	_____	_____	_____
Allergies	_____	_____	_____	_____
Cancer	_____	_____	_____	_____
Muscle/skeletal:				
Arthritis	_____	_____	_____	_____
Rheumatism	_____	_____	_____	_____
Muscle pain	_____	_____	_____	_____
Backaches	_____	_____	_____	_____
Eyes/ears/mouth:				
Hearing loss (partial/full)	_____	_____	_____	_____
Colour blindness	_____	_____	_____	_____
Double vision	_____	_____	_____	_____
Glaucoma	_____	_____	_____	_____
Earaches	_____	_____	_____	_____
False teeth	_____	_____	_____	_____
Tonsils removed	_____	_____	_____	_____
Number of cavities	_____	_____	_____	_____
Other:				
Gall bladder disease	_____	_____	_____	_____
Liver disease	_____	_____	_____	_____
Syphilis/VD	_____	_____	_____	_____
Malaria	_____	_____	_____	_____
Headaches	_____	_____	_____	_____
Hepatitis	_____	_____	_____	_____
Fits or convulsions	_____	_____	_____	_____
Nervous breakdowns	_____	_____	_____	_____
Depression	_____	_____	_____	_____
Other brain/nerve problems	_____	_____	_____	_____

	SELF		PARENTS	
	Yes	No	Yes	No
Hernia	_____	_____	_____	_____
Circumcision	_____	_____	_____	_____
Cancer or lumps	_____	_____	_____	_____
Rheumatic fever	_____	_____	_____	_____
Polio	_____	_____	_____	_____
Tuberculosis	_____	_____	_____	_____
Thyroid disease	_____	_____	_____	_____
Diabetes	_____	_____	_____	_____
Numbness in legs/arms	_____	_____	_____	_____
New skin growths	_____	_____	_____	_____
Bleeding/bruising easily	_____	_____	_____	_____
Anaemia	_____	_____	_____	_____
Balance problems	_____	_____	_____	_____
Yellow jaundice	_____	_____	_____	_____
Lymph node enlargement	_____	_____	_____	_____
Kidney stones	_____	_____	_____	_____
Insomnia	_____	_____	_____	_____
Others				

Give details of "yes" items and include any injury, deformity, or illness not listed:

Operations (list type and year):

List childhood illnesses:

Psychiatric illnesses:

Do you wear glasses? _____ Contact lenses _____?

Are you allergic?

Please describe your general eating habits:

Do you regularly use alcohol? Yes ____ No ____

How much daily? _____

Do you smoke cigarettes? Yes ____ No ____

How many daily? _____

Do you do drugs? Yes ____ No ____

Which ones and how often?

Are you or have you ever been an IV drug user: Yes ____ No ____

If yes, what kind and for how long have you been taking it?

Please tell us anything else you think we should know about your/your parents'/your grandparents' medical history:

Personal information

Why are you willing to be a sperm donor?

Ethnic background: _____

Mother's family: _____

Father's family: _____

Are your parents alive? Yes _____ No _____

If no, what did they die of? At what age?

Your eye colour: _____ Hair colour: _____

Number of brothers: _____ Number of sisters: _____

To the best of your knowledge, have you ever impregnated anybody?

Yes _____ No _____

Have you had any children? Yes _____ No _____

If yes, number female _____ Number male _____

Interests/hobbies/sports you do:

Any other information you think might be of interest:

Sexual history

Are you in a monogamous relationship? Yes _____ No _____

With a man? _____ With a woman? _____

If yes, for how long? _____

Please give some information about your sexual history over the past 10 years. How many people have you had sexual contact with? Of what sex?

Do you have any reason to believe you may have come into contact with the HIV virus?

Thank you again for taking the time to answer all these questions.

Appendix 5. Sample Donor-Recipient Agreement

This agreement is made this ____ day of _____, 1992 by and between _____, hereafter DONOR, and _____, hereafter RECIPIENT, who may also be referred to herein as the parties.

Now, therefore, in consideration of the promises of each other, DONOR and RECIPIENT agree as follows:

1. Each clause of this agreement is separate and divisible from the others, and should a court refuse to enforce one or more clauses of this agreement, the others are still valid and in full force.
2. DONOR will provide his semen to RECIPIENT for the purpose of alternative insemination.
3. Each party acknowledges and agrees that DONOR will provide his semen for the purposes of said alternative insemination, and does so with the clear understanding that he will not demand, request or compel any guardianship, custody, or access rights with any child born from alternative insemination procedure. Further, DONOR acknowledges that he fully understands that he will have no paternal rights whatsoever with said child.

4. Each party acknowledges and agrees that RECIPIENT relinquishes any and all rights that she might otherwise have to hold DONOR legally, financially, or emotionally responsible for any child that results from the alternative insemination procedure. The RECIPIENT specifically acknowledges that notwithstanding a material change in circumstances she releases the DONOR from any claims for child support or maintenance or interim child support or interim child maintenance under the laws of any jurisdiction and specifically under the Family Law Act 1986 and the Succession Law Reform Act and their successor. The RECIPIENT also specifically releases the DONOR from any claim she has or may in the future have for support or maintenance for herself as the child's mother and for payment of any natal or prenatal expenses.

5. Each party acknowledges and agrees that the sole authority to name any child resulting from alternative insemination procedure shall rest with RECIPIENT.

6. Each party acknowledges and agrees that there shall be no father named on the birth registration documents of any child born from the alternative insemination procedure.

7. Each party relinquishes and releases any and all rights he or she may have to bring a suit to establish paternity.

8. Each party agrees that a third party, (name of third party), shall act as the intermediary between the two parties and that she will convey any information or documentation necessary to carry out the artificial insemination procedure. The DONOR agrees that he will keep (name of third party) informed of his current address.

9. The DONOR agrees that in the event of (name of third party)'s death or injury resulting in her inability to understand her responsibility as intermediary, he will contact a fourth party, (name of fourth party) and all obligations with respect to the third party will thereafter be transferred to the fourth party. The DONOR will thereafter keep the said fourth party informed as to his current address.

10. The DONOR agrees that prior to providing his semen for alternative insemination he will undergo blood tests for the HIV virus and for hepatitis, and will also undergo a sperm analysis. The results of these tests will be kept in the confidential file of the RECIPIENT's doctor.

11. Attached to this agreement is Schedule A, which contains medical information given by the DONOR. The DONOR agrees that to the best of his knowledge the information contained in Schedule A is a full and complete disclosure of his medical history and contains information about

any congenital or genetic disorders or any serious condition that could impact on the health and well-being of the said child that have been detected in the DONOR or his family. The DONOR agrees that if at any time in the future he is discovered to be suffering from any other congenital or genetic disorder or serious condition that could impact on the health and well-being of the said child not disclosed in Schedule A, he will inform the third party (name of third party), as soon as possible, who will pass this information on to the RECIPIENT.

12. The DONOR agrees that the information contained in Schedule A as well as any other non-identifying information can be made available to the child resulting from the alternative insemination procedure. Non-identifying information is any medical, genetic, or social information about the DONOR which does not lead to the identification of the individual.

13. The DONOR agrees that if the said child develops a serious or life-threatening disease or disorder that requires information or medical assistance from a blood relative the DONOR will be informed of this through the third party.

14. Each party covenants and agrees that RECIPIENT shall have absolute authority and power to appoint a guardian for her child, and that the mother and/or guardian may act with sole discretion as to all legal, financial, medical, and emotional needs of said child without any involvement with or demands of authority from DONOR.

15(A). Each party covenants and agrees that neither of them will identify the DONOR as the biological genitor or parent of the child, nor will either of them reveal the identity of the DONOR to any of their respective parents, relatives, or friends.

OR

15(B). Each party covenants and agrees that neither of them will identify the DONOR as the biological genitor of the child until the child reaches the age of eighteen years. Nor will either of them reveal the identity of the DONOR to any of their respective parents, relatives, or friends. When the child reaches eighteen years of age, the DONOR agrees that if the child so chooses he or she will be told the identity and address of the DONOR. This will happen only at the request of the child. The DONOR does not have the right to know the child's identity when the child reaches eighteen years of age.

16. Each party acknowledges and agrees that the relinquishment of all rights, as stated above, is final and irrevocable. DONOR further understands that his waivers shall prohibit any action on his part for custody, guardianship, or access in any future situation, including the event of RECIPIENT's disability or death.

17. Each party acknowledges and understands that there are legal questions raised by the issues involved in this agreement, which have not been settled by statute or prior court decisions. Notwithstanding the knowledge that certain of the clauses stated herein may not be enforceable in a court of law, the parties choose to enter into this agreement and clarify their intent that existed at the time the alternative insemination was implemented by them.

18. Each party acknowledges and agrees that she or he signed this agreement voluntarily and freely, of his or her own choice, without any duress of any kind whatsoever, and that each party understands the meaning and significance of each provision of this agreement.

19. This agreement and attached Schedule A contain the entire understanding of the parties. There are no promises, understandings, agreements, or representations between the parties other than those expressly stated in this agreement.

20. The third party, (name of third party), will keep a signed copy of this agreement in a safety deposit box. The DONOR and RECIPIENT will each receive an unsigned copy of this agreement. No other copies of this agreement will be made by either party.

IN WITNESS THEREOF, the parties hereunto have executed this agreement, in the City of Toronto, on the day and year first above written.

DONOR

RECIPIENT

WITNESS

WITNESS

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Notes

1. K.A. Lahey, "The Criminal 'Justice' System and Reproductive Technology," *Resources for Feminist Research* 13 (December 1985-January 1986): 27-30; D. Wikler and N.J. Wikler, "Turkey-Baster Babies: The Demedicalization of Artificial Insemination," *Milbank Quarterly* 69 (1991): 5-40.
2. See, for example, British Columbia, Royal Commission on Family and Children's Law, *Ninth Report of the Royal Commission on Family and Children's Law. Artificial Insemination* (Vancouver: The Commission, 1975); Canada, Health and Welfare Canada, *Storage and Utilization of Human Sperm*, Report of the Advisory Committee to the Minister of National Health and Welfare (Ottawa: Health and Welfare Canada, 1981); W.J. Finegold, *Artificial Insemination*, 2d ed. (Springfield: Charles C. Thomas, 1976); J.C. Fletcher, "Artificial Insemination in Lesbians: Ethical Considerations," *Archives of Internal Medicine* 145 (1985): 419-20; Ontario Law Reform Commission, *Report on Human Artificial Reproduction and Related Matters* (Toronto: Ontario Ministry of the Attorney General, 1985); Law Reform Commission of Saskatchewan, *Tentative Proposals for a Human Artificial Insemination Act* (Saskatoon: The Commission, 1981); R. Snowden, G.D. Mitchell, and E.M. Snowden, *Artificial Reproduction: A Social Investigation* (London: Allen and Unwin, 1983); R. Snowden and G.D. Mitchell, *The Artificial Family: A Consideration of Artificial Insemination by Donor* (London: Allen and Unwin, 1981); United Kingdom, Committee of Inquiry into Human Fertilisation and Embryology, *Report*, Cmnd 9314 (London: HMSO, 1984) (Dame Mary Warnock, Chair).
3. S. Allen and L. Harne, "Lesbian Mothers — The Fight for Child Custody," in *Radical Records: Thirty Years of Lesbian and Gay History, 1957-1987*, ed. B. Cant and S. Hemmings (London: Routledge, 1988); R.H. Blank, *Regulating Reproduction* (New York: Columbia University Press, 1990); G. Butler, "Donor Insemination: New British Law Threatens Lesbians' and Single Women's Rights," *Women's Global Network for Reproductive Rights Newsletter* 32 (1990): 20-21; T. Kaufmann, "How the New Law Will Affect Donor Insemination," *Women's Global Network for Reproductive Rights Newsletter* 32 (1990): 21; E. Smillie, "Deciding Who Will Parent," *Briarpatch* 15 (February 1986): 11; D.L. Steinberg, "Selective Breeding and Social Engineering: Discriminatory Policies of Access to Artificial Insemination by Donor in Great Britain," in *Made To Order: The Myth of Reproductive and Genetic Progress*, ed. P. Spallone and D.L. Steinberg (Oxford: Pergamon Press, 1987); J. Wheelwright, "Citizens or Scum in the Cesspit?" *This Magazine* 24 (October-November 1990): 7-8.

4. Treatment for male infertility is, in the case of DI, carried out on the person of his female partner. See Blank, *Regulating Reproduction*; S. Brodribb, *Women and Reproductive Technologies* (Ottawa: Status of Women Canada, 1988).
5. R. Achilles, "Donor Insemination: The Future of a Public Secret," in *The Future of Human Reproduction*, ed. C. Overall (Toronto: Women's Press, 1989); R. Achilles, "The Social Meaning of Biological Ties: A Study of Participants in Artificial Insemination by Donor," Ph.D. dissertation, University of Toronto, 1986.
6. Brodribb, *Women and Reproductive Technologies*.
7. For mainstream and alternative media accounts see, for example, N. Adamson, "Self-Insemination," *Healthsharing* 6 (Fall 1985): 8-9; J. Forster, "Creating Sappho's Family," *off our backs* 12 (November 1982): 20-21; R. Goldstein, "The Gay Family," *New York Village Voice* 31 (8 July 1986): 19-22ff.; K.A. Lahey, "Alternative Insemination: Facing the Conceivable Options," *Broadside* 8 (October 1986): 8-10; Lahey, "The Criminal 'Justice' System"; Lavendar Conception Conspiracy, "Lesbians: Becoming Mothers," *Kinesis* (May 1985): 18, 36; "Lesbians Meet to Discuss Pregnancy," *Kinesis* (February 1985): 2; L. Scotton, "Gay Parents," *Toronto Star* (2 July 1991): F1, F3; D.K. Shah, L. Walters, and T. Clifton, "Lesbian Mothers," *Newsweek* 93 (12 February 1979): 61; D. Swanbrow, "Immaculate Conceptions," *New West* (25 August 1980): 27-31; L. Van Gelder, "Gay Gothic," *Ms.* 16 (July-August 1987): 147ff.; S. Wilkes, "Not as Easy as 1-2-3: Lesbians Trying to Get Pregnant," *Rites for Lesbian and Gay Liberation* 1 (March 1985): 13.
8. G. Corea, *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs* (New York: Harper and Row, 1985).
9. See, for example, S. Brodribb, "Off the Pedestal and Onto the Block? Motherhood, Reproductive Technologies, and the Canadian State," *Canadian Journal of Women and the Law* 1 (1986): 407-23; Finegold, *Artificial Insemination*; J. Hanmer, "Sex Predetermination, Artificial Insemination and the Maintenance of Male-Dominated Culture," in *Women, Health and Reproduction*, ed. H. Roberts (London: Routledge and Kegan Paul, 1981); S. Robinson and H.F. Pizer, *Having a Baby Without a Man: The Woman's Guide to Alternative Insemination* (New York: Simon and Schuster, 1985); Wikler and Wikler, "Turkey-Baster Babies."
10. A.E. Potter and P.K. Knaub, "Single Motherhood by Choice: A Parenting Alternative," *Lifestyles: Family and Economic Issues* 9 (1988): 240-49.
11. D. Callahan, "Opening the Debate? A Response to the Wiklers," *Milbank Quarterly* 69 (1991): 41-44; Finegold, *Artificial Insemination*; B. Freedman et al., "Non-Medical Selection Criteria for Artificial Insemination and Adoption," *Clinical Reproduction and Fertility* 5 (1987): 55-66; Snowden and Mitchell, *The Artificial Family*; Snowden et al., *Artificial Reproduction*.
12. C. Strong and J.S. Schinfeld, "The Single Woman and Artificial Insemination by Donor," *Journal of Reproductive Medicine* 29 (1984): 293-99.
13. B. Kritchevsky, "The Unmarried Woman's Right to Artificial Insemination: A Call for an Expanded Definition of Family," *Harvard Women's Law Journal* 4 (1981): 1-42.
14. Fletcher, "Artificial Insemination in Lesbians," 420; G.T. Perkoff, "Artificial Insemination in a Lesbian: A Case Analysis," *Archives of Internal Medicine* 145 (1985): 527-31.

15. Perkoff, "Artificial Insemination," 531.
16. M. McGuire and N.J. Alexander, "Artificial Insemination of Single Women," *Fertility and Sterility* 43 (1985), 182, 184.
17. C.F. McCartney, "Decision by Single Women to Conceive by Artificial Donor Insemination," *Journal of Psychosomatic Obstetrics and Gynaecology* 4 (1985), 321.
18. A. Brewaeys et al., "Counselling and Selection of Homosexual Couples in Fertility Treatment," *Human Reproduction* 4 (1989), 851. One couple dropped out before the evaluation was completed.
19. Freedman et al., "Non-Medical Selection Criteria."
20. This was true at the time of writing. Just prior to the publication process, the Canadian Law Reform Commission made the following recommendation:

Legislation governing access to medically assisted procreation technologies should respect the right to equality. Access should be limited only in terms of the cost and scarcity of resources. Where limitation is necessary, selection should not be based on unlawful grounds for discrimination within the meaning of federal and provincial legislation (family status, marital status, sexual orientation, and so on).
- See Law Reform Commission of Canada, *Medically Assisted Procreation*, Working Paper 65 (Ottawa: LRC, 1992), 129.
21. British Columbia, *Ninth Report*; Ontario Law Reform Commission, *Report on Human Artificial Reproduction*; Law Reform Commission of Saskatchewan, *Tentative Proposals*.
22. British Columbia, *Ninth Report*, 11.
23. Law Reform Commission of Saskatchewan, *Tentative Proposals*, Section I, 1-2.
24. Ontario Law Reform Commission, *Report on Human Artificial Reproduction*, 152.
25. Lahey, "The Criminal 'Justice' System."
26. United Kingdom, Committee of Inquiry, Para. 2.9.
27. *Ibid.*, Para. 2.11.
28. S. Golombok and J. Rust, "The Warnock Report and Single Women: What About the Children?" *Journal of Medical Ethics* 12 (1986), 185.
29. United Kingdom, Committee of Inquiry, Para. 2.11.
30. The sole exception are Spanish proposals that would allow DI for single women and assisted reproduction for homosexuals. Blank, *Regulating Reproduction*, 151.
31. *Ibid.*, 148, 119, respectively.
32. Editors of the Harvard Law Review, *Sexual Orientation and the Law* (Cambridge: Harvard University Press, 1990); Kritchevsky, "The Unmarried Woman's Right to Artificial Insemination."
33. Kritchevsky, "The Unmarried Woman's Right to Artificial Insemination"; N.D. Polikoff, "This Child Does Have Two Mothers: Redefining Parenthood to Meet the Needs of Children in Lesbian-Mother and Other Nontraditional Families," *Georgetown Law Journal* 78 (1990): 459-75. Re-definition seems to be happening on an ad hoc basis. See C.C. Douglas, "Lesbian Child-Custody Cases Redefine

Family Law," *New York Times* (8 July 1990): E9; K. Monagle, "Court Backs Two-Mom Family," *Ms.* 18 (October 1989): 69.

34. C.B.C., "Artificial Insemination," "As It Happens," 14 December 1990; "Psychological Testing No Longer Required for Single Women," *Thunder Bay Times-News* (17 December 1990): 8.

35. See, for example, P. Bagne, "High-Tech Breeding," *Mother Jones* 8 (August 1983): 23-29, 35; "15 Percent of Sperm Bank's Insemination Recipients Are Single Women Who Want to Have a Family," *PR Newswire* (15 August 1988); B. Kantrowitz et al., "Mothers on Their Own," *Newsweek* (23 December 1985): 66-67; L. Kinross, "Going It Alone," *Toronto Star* (21 December 1991): E1, E5; "Single Woman Remains Hopeful of Having Baby Through Insemination Despite 'Jest of God,'" *Pandora* 5 (June 1990): 17; R. Walker, "Calgary Service May Offer Artificial Insemination to Single Women, Lesbians," *Medical Post* 26 (20 November 1990): 45.

36. For examples of some of the available literature see: K. Arnup, "Brief Presented to the Royal Commission on the New Reproductive Technologies," Toronto, 20 November 1990; R.D. Klein, "Doing It Ourselves: Self-Insemination," in *Test-Tube Women: What Future for Motherhood?* ed. R. Arditti, R.D. Klein, and S. Minden (London: Pandora Press, 1984); Feminist Self-Insemination Group, *Self-Insemination* (London, 1980); Halifax Lesbian Committee on Reproductive Technologies, "Brief to the Royal Commission on New Reproductive Technologies," Halifax, 17 October 1990; G.E. Hanscombe and J. Forster, *Rocking the Cradle: Lesbian Mothers: A Challenge in Family Living* (Boston: Alyson, 1982); D.J. Hitchens, *Legal Issues in Donor Insemination* (San Francisco: Lesbian Rights Project, 1984); F. Hornstein, "Children by Donor Insemination: A New Choice for Lesbians," in *Test-Tube Women: What Future for Motherhood?* ed. R. Arditti, R.D. Klein, and S. Minden (London: Pandora Press, 1984); F. Moira, "Lesbian Self-Insemination: Life Without Father?" *off our backs* 12 (January 1982): 12-13; M. O'Donnell et al., *Lesbian Health Matters!* (Santa Cruz: Santa Cruz Women's Health Center, 1979); C. Pies, *Considering Parenthood: A Handbook for Lesbians* (San Francisco: Spinsters Book, 1985); L. Saffron, *Getting Pregnant Our Own Way: A Guide to Alternative Insemination* (London: Women's Health Information Centre, 1986); J.A. Schulenburg, *Gay Parenting* (New York: Anchor Press/Doubleday, 1985); "Women Start Artificial Insemination Service," *Toronto Star* (26 June 1982): A7.

37. See, for example, E. Uzelac, "Major Gay Communities Experience Baby Boom," *Ottawa Citizen* (21 March 1989): C6.

38. See K. Weston, *Families We Choose: Lesbians, Gays, Kinship* (New York: Columbia University Press, 1991) for an analysis of DI and SI in a context of lesbian and gay kinship networks.

39. See, for example, "Sperm Donor Wins Round," *Calgary Herald* (25 July 1991): C11; "Sperm Donor Granted Hearing," *off our backs* 19 (July 1989): 7.

40. For examples see L. Bell, *On Our Own Terms: A Practical Guide for Lesbian and Gay Relationships* (Toronto: Coalition for Lesbian and Gay Rights in Ontario, 1991); Hitchens, *Legal Issues*; Pies, *Considering Parenthood*.

41. P. Liljestrand, "Children Without Fathers," *Out/Look* (Fall 1988): 24-29.

42. Alternative practice in donor insemination refers to practitioners who will inseminate women not in heterosexual relationships without a lot of questions and

do not insist on using fertility drugs when they are not indicated. Some order sperm from U.S. sperm banks or Repromed in Toronto where recipients can select donor characteristics, which may include donor identity-release information. This system makes it possible for the child(ren) conceived through donor insemination to have access to information about the sperm donor and possibly meet him when they are older.

43. This list will not be made available since most participants requested anonymity as a prerequisite to participation in the study. The original list was modified greatly by the end of the study in any case.

44. Comment by Holliday Tyson.

45. One women's health centre, one women's centre, and a rape crisis centre.

46. U.S., Congress, Office of Technology Assessment, *Artificial Insemination: Practice in the United States: Summary of a 1987 Survey — Background Paper* (Washington, DC: Office of Technology Assessment, 1988).

47. Canadian Fertility and Andrology Society, *Guidelines for Therapeutic Donor Insemination* (Montreal: Canadian Fertility and Andrology Society, 1988).

48. My thanks to Vicki Van Wagner for the wording of this paragraph.

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The Conceptual Framework of Donor Insemination

Daniel Wikler



Executive Summary

The practice of donor insemination as a means of enabling infertile couples to have children has been offered by physicians in North America for about one century. Over this time it has become widely accepted, the opposition of some church authorities notwithstanding. The author outlines how the practice, and the legal and ethical framework in which it is carried out, rest on a conceptual base that is much more complex and problematical than is widely appreciated.

Donor insemination has traditionally been viewed as a medical response to the medical problem of male infertility. The author challenges this view by noting that donor insemination does not cure a medical problem, because the infertile husband is not treated. The woman who receives the donor sperm most often has no reproductive health problem herself. Donor insemination is not in itself a medical technique — it can be performed easily by the lay person with no expensive equipment. Its medicalization, however, serves several implicit social and psychological functions; for example, the mediation of the physician separates the donor from the wife, and the clinical nature of the process “launders” the sperm and reduces it to a fertility drug.

Recent trends in donor insemination practice, including the insemination of single women and lesbians and the practice of self-insemination by women without medical training, are revealing and challenging the conceptual and ethical presuppositions of the medicalization of the practice. In the light of these challenges the author re-evaluates the practice, pointing out that, fundamentally, single and married women resort to donor insemination for the same social or psychological rather than medical reason — to avoid having unwanted intercourse.

In enumerating some of the tensions in current donor insemination policy, the author evaluates the arguments in favour of and against demedicalizing it, from the point of view of cost, safety, consumer protection, and equitability for all concerned, including the children. He concludes by noting some implications of these issues for other reproductive technologies, and argues that the current "technological fixation" has directed attention away from important ethical and social considerations.

Introduction

The practice of donor insemination in human beings is about one century old. Given the sensitivity of the issues involved, it has become remarkably widespread. It is one of the most common medical responses to male infertility.¹ Although some religious groups — most prominently the Roman Catholic Church — oppose donor insemination on doctrinal grounds, it has been widely accepted by the public, and in many jurisdictions it is supported by legislation. Although careful research into the effects of donor insemination on the parties involved is lacking, existing data support the conclusion that in the main the parents are satisfied and the children normally adjusted.² In contrast with the headlines and television features occasioned by the flashier reproductive technologies, the practice of donor insemination continues without much public fascination or comment. Though not quite unremarkable, it has over the years become a socially acceptable method of conceiving.

This benign portrait of donor insemination practice, while accurate in each of its claims, is nevertheless highly misleading. Donor insemination is in one sense a purely mechanical event — the introduction of sperm into a woman's vagina through a plastic tube — but it would not be used and would not have the effect it does without the support and influence of a complex web of feelings, expectations, values, customs, and laws. Moreover, this web is a tangled one whose strands are in some ways mutually supportive and in other ways in high tension. New stresses in the web, currently but not inevitably at the periphery, threaten to destroy the fabric. Even in the best-managed cases, the support of donor insemination practice that this social fabric represents is, in the author's view, based

largely on illusions and the almost wilful misunderstanding of some basic facts. Ironically, some of the most appealing policy options would perpetuate and even compound these illusions.

This analysis begins with a short account of the conventional view of donor insemination practice, followed by a critique of this view in light of insights from some recent, unconventional insemination practices. Social tensions and contradictions in the standard assumptions that underlie donor insemination policy are enumerated. The final section outlines some of the policy choices that might resolve these tensions, and suggests that the case of donor insemination illuminates some of the controversies over other reproductive technologies.

The Conventional View

In the conventional view, donor insemination is a response to a *medical* problem — that of male infertility. It is also considered a solution to a couple's inability to have children, one that enables them to be seen as sharing the problem as well as the benefit of treatment. Throughout the medical literature on donor insemination, the "indications" for "treatment" always include male infertility, and they often consist of only this condition. Moreover, according to the standard account, donor insemination is a *medical technique* to be performed by or under the supervision of a licensed physician, preferably one with special training. As with all medical procedures, the practice of donor insemination is, in this view, subject to the usual standards of quality and efficacy and governed by the ethical norms that regulate the profession.

When physicians ventured beyond insemination by husband to insemination by donor, critics charged that the practice amounted to little more than adultery and that it would undermine the traditional family. The Roman Catholic Church teaches that donor insemination violates natural law (in part because it requires an act of masturbation). Yet in North American society these are minority views. Indeed, donor insemination is seen as a practice that shores up the traditional family. To the extent that childlessness is viewed as the lack of fulfilment of a married couple's mission or even as a threat to the harmony of a marriage in that one partner might be tempted to seek parenthood through sexual union with another, donor insemination puts the marriage back on track and permits the husband and wife to form a "complete" family unit. As currently practised, moreover, no one but the husband, wife, and physician need know that what seems to others to be a family in the traditional mode has an unusual provenance.

In the standard view of donor insemination, the sperm donor serves only as a source of tissue. His relationship with the child who results from the insemination is scarcely more intimate or enduring than it would have

been had he donated blood or bone marrow rather than semen. The donor is acquainted only with the doctor or the sperm bank and expects never to meet the husband, wife, or child. All involved in the process expect the child to forge a parent-child relationship with his or her mother's husband, with hardly a thought of the donor.

Finally, in the conventional view, children born of donor insemination are to be considered as normal as possible. They will have a father and a mother just like others do, though the father will not have contributed his genes. They will not be stigmatized (perhaps because their origins will be kept secret), nor will they be treated differently before the law. Their chances in life should be approximately the same as those of children who have been conceived by ordinary methods.

Critique of the Conventional View in Light of Changes in the Practice of Donor Insemination

Little of this description of the conventional view of donor insemination is literally and necessarily true. Donor insemination is *not* a cure for infertility. It does not involve the administration of medicine, nor does it render any sick person healthy. The woman who is the recipient of donor insemination is ordinarily in good reproductive health. Her husband, if she has one, does have a medical problem, but with donor insemination he is left untreated. If medical texts cite male infertility as an (or *the*) "indication" for donor insemination, that is their privilege, but nothing in medical science makes it so. A woman might request donor insemination because she is married to an infertile man or for any of a number of other (less common) reasons; when the physicians label male infertility as an "indication" they are saying little more than that among the reasons a woman might have for requesting insemination, this is the one they see fit to honour.

Similarly, donor insemination is not in itself a medical technique, at least not in the sense that for safety and efficacy it should be performed by a physician. Anyone can do it. The collection of sperm is performed by the donor, and no sterile conditions are needed for its short-term storage. Insertion is very simple and can be as successfully and safely executed with a kitchen utensil as it can with a syringe, provided that the woman has no reproductive health problems. Sperm obtained from donors known to the woman or to go-betweens are as likely to be free of diseases transmitted through sperm as those from sexual partners are; for an extra measure of assurance, a woman can obtain sperm directly from a sperm bank that screens donors for AIDS (acquired immunodeficiency syndrome) and other communicable diseases and that also refuses donations from men whose genetic history is suspect.

The perception that donor insemination supports the traditional nuclear family is not based on any properties inherent in the practice itself, but on the perceiver's willingness to regard the woman's pregnancy as different from one that would result from adultery. This is enabled because no sexual or personal interaction between the woman and the sperm donor has occurred. In effect, it requires the perceiver to ignore that the woman is carrying another man's child. Moreover, the same technique of donor insemination has been used by single women in a radical departure from traditional family mores — the deliberate creation of a mother-child "family" in which the father is as absent as is technologically and socially feasible at the present time.

That the sperm donor is, socially and psychologically, no party to the production of the child is again a fact about attitudes rather than necessities. As will be explored later, the process by which the donor is distanced from the child is inconsistent with other ways in which fatherhood is established and maintained, and is but one social choice among many. Moreover, it is fostered by the convention that donor insemination is a medical practice; were it not carried out by physicians, the distancing might not be as feasible.

The "normality" of the children who are a result of donor insemination seems to be genuine, in the sense that there is little evidence that they have special, serious problems. But insemination of single women does create a singularity for the children: no man is known to them or even to their mother as their father. In this respect they differ from all children except the few individuals whose mothers genuinely do not know the identity of the man who impregnated them. Even children born to married women through donor insemination are potentially vulnerable to "genealogical bewilderment" and longing to meet their biological fathers. Children kept ignorant of their origins in insemination would not experience these feelings, but the practice of secrecy seems to be eroding. Moreover, a movement has begun to assert the interest of these children in learning the identity of their fathers, a process that could serve to maintain their active interest in these questions.

What accounts for the popular acceptance of the conventional view, in light of its vulnerability on nearly every point? Though any explanation is bound to be speculative, the array of perceptions and traditions that make up contemporary North American donor insemination practice and policy falls into a pattern when illuminated by a theme familiar in medical sociology and ethics — medicalization. Donor insemination is medicalized not only in the sense that physicians perform it, but also, and much more important, because the parties to the event take on the "medical" roles of doctor, patient, and tissue donor and their actions thus acquire legitimacy and authority.

There are many reasons why donor insemination became medicalized. First, physicians as medical scientists did the first research into human reproductive mechanisms. They acquired knowledge of the timing of the

female reproductive cycle and other information that is useful in effective insemination practice. Second, and more important in light of the simplicity of the procedure, they gained the patronage of their "patients" because the latter could not ordinarily determine the cause of their inability to conceive. True, the remedy of donor insemination is normally used only after the physician determines that the reproductively ill patient cannot be treated, but by then the doctor-patient relationship has been established.

The medicalization of donor insemination would not have been maintained, however, if it did not provide benefits to the parties involved. Physician involvement can be ascribed to the desire to help the childless couple and the remuneration involved. The benefits to the couple, while less tangible, are more significant. The physician offers secrecy through the legal requirement of medical confidentiality, thus enabling the couple to avoid stigmatization and overt kinship uncertainties. Given the common confusion between infertility and impotence, the husband's manhood is also safeguarded. Moreover, the doctor as middleman serves to sever the link between the donor and the wife. The doctor does not arrange for the donor to meet the couple, nor is the donor's identity revealed. (Physicians commonly adhered to this tradition by refusing to use donors known to their patients, even at the couple's request.) By paying the donor a token fee, the physician effectively distinguishes the donor's role from that of parent or lover.

Another central contribution of the doctor is in providing the act of insemination with the aura of the clinic. Through the vestiges of his or her office — the white coat, the medical instrumentation, the presence of the nurse — the physician in effect "launders" the sperm, transmuting the product of a sexual event into a fertility drug and converting what might in other circumstances be regarded as sin (the sin of adultery) into therapy. The Canadian woman who told the Commission that being inseminated felt as "medical" as receiving an allergy shot could hardly have made the same remark had the sperm been given to her directly from the donor in a motel room.

The non-sexual, non-familial trappings of the clinic thus make it possible to perceive donor insemination as making pregnancy possible and at the same time minimizing the emotional and social encumbrances that would otherwise accompany it. In particular, it bypasses any suggestion that the donor should be made to accept the responsibilities (or the rights) of fatherhood and, with few exceptions until recently, has prevented the child from being able to trace his or her bloodlines.

If the reader accepts this account, the tenability of the conventional view of donor insemination requires a suspension of disbelief. Once the medicalization of donor insemination is understood in terms of its social and moral functions, its capacity to structure our beliefs, expectations, and ethical appraisals is reduced.

This reconceptualization is increasingly unavoidable as challenges are mounted to traditional insemination practices. The most direct assault on

the tradition of medicalization is the increasing prevalence of self-insemination. Fostered by the women's medical self-help movement in the United States and the United Kingdom — whose clinics teach women to time their ovulation cycles — and fuelled by resentment over the exclusion of single women and lesbians from the medical fertility clinics that offer donor insemination, lay women found, to their surprise, that they could become pregnant by inseminating themselves. Using sperm donated by friends, friends of friends, or sperm banks operated by feminists, these women follow instructions given in workshops and self-insemination support groups and avoid the rejection and expense of physician fertility specialists.

The success of these women in achieving pregnancy on their own with apparent safety has hardly dented the general enterprise of donor insemination. Physicians still dominate the practice. But even the casual observer must be struck by the ease with which individuals who are not medically trained accomplish these results. Moreover, because it appears that most of the women who inseminate themselves are unmarried, self-insemination targets another pillar of support for the medicalization of the practice — the illusion that insemination is a medical remedy for a medical condition. The standard “indication” for medical insemination, the infertility of a husband, is wholly lacking in these cases. There is no man with a reproductive health problem, and the inseminating woman is healthy, so there is no medical problem to be addressed. The reason for inseminating is simply the decision to have a baby with the least possible involvement of a man.

The realization that the occasion of donor insemination need not be anyone's medical problem suggests a new way of thinking about the standard cases as well. Just as the single woman undertakes insemination to avoid unwanted intercourse, the married woman does so for precisely the same reason. She, too, is unwilling to attempt to become pregnant by having sexual intercourse with a fertile man. That would be adultery and would be unacceptable.

Single and married women could avail themselves of the same opportunity and so remedy the problem of childlessness. Each has her own reasons for declining to do so, but they are, in both cases, psychological or social reasons, not medical ones. Because the focus is on the medical problem of the married woman's husband, her reason for seeking insemination is classed as “medical” and the insemination is “indicated”; were the focus instead on her desire to avoid having intercourse with a man other than her husband for the sole purpose of procreation, the reason for the insemination would seem less “medical.” The doctor is, in effect, acting as a go-between in a socially sanctioned method by which the married woman can be impregnated by the donor — it is just as “social” a function as introducing a single prospective mother to an unmarried male at a singles event, but this is not how it has been perceived during the many decades of its practice.

Reframing how donor insemination is viewed prompts a reconsideration not only of the status of donor insemination as a medical practice but also of the rationality of the many social arrangements surrounding the relationships between the principals. For better or for worse, removing the medical theme from insemination produces contradictions and tensions in thinking (and feeling) about donor insemination and makes matters much less clear than they seemed.

Tensions and Conflicts in Donor Insemination Policy

Six Problems

Is Donor Insemination a Medical Procedure?

There is a close conceptual relationship between medical *need* and *social entitlement*.³ Medical services that are perceived as responding to “wants,” such as beauty-enhancing plastic surgery, are provided at the patient’s expense. On the other hand, the medical care that a person “needs” is not to be denied in a just (and sufficiently affluent) society. Whether donor insemination should be provided at the state’s expense in Canada as are some other reproductive technologies is a controversial issue in the literature collected by the Commission. To the extent that this issue turns on the philosophical question of “need” versus “want,” its resolution requires that the status of donor insemination be judged.

In favour of donor insemination’s medical status is the tradition of medical performance, the clinical setting in which it is performed, and the fact that the most common reason for offering insemination is the husband’s infertility. On the other side, it can be maintained that a service does not qualify as a medical service simply because it helps to circumvent a medical problem. To make an analogy, even if some physicians were to make a living on the side running an adoption bureau that specializes in serving couples rendered childless through infertility, this service would not qualify as medical. And, of course, single women seeking insemination are not motivated by infertility at all.

One proposal that emerges in the material collected by the Commission addresses the status of donor insemination by proposing a new “diagnosis,” that of *social infertility*. A *socially infertile* woman is one who cannot conceive because her social relationships do not permit it. The obvious example is the single, unattached, but fertile woman who does not wish to have sexual intercourse with a man for the purpose of procreation. (One such woman, testifying before the Commission, was told by her physician to stand on the street in her town’s red-light district.) Lesbians are another example. Acceptance of “social infertility” as a health issue amounts to a decision to extend entitlement to donor insemination services to these otherwise healthy women.

At the conceptual level, the central argument against this proposal is that it simply does not make sense. Not having a mate may be misfortune or it may be preference, but it is not a diseased state. Moreover, inventing medical labels for non-medical conditions might undermine the sense of social justice that underlies a national health system; to the extent that the system alleviates medical needs, it is discredited when the definition of "need" is inflated beyond reason.

Defenders of the notion of "social infertility," however, have a plausible reply: *all* demands for donor insemination are based on social infertility. Again, the fact is that women married to infertile men are usually healthy, in the literal sense of that term. They seek insemination because the alternatives — childlessness, adoption, or sexual intercourse with a fertile man other than their husband — are not acceptable to them for social or psychological reasons, or not possible (adoption). Indeed, the concept of "social infertility" actually strengthens the married woman's claim to publicly funded donor insemination, for it gives "medical" status to what would otherwise be merely personal preference.

Should Donor Insemination Remain Medicalized?

Donor insemination is currently medicalized, but it need not be, even for married couples. It is possible to phase out the medicalization of donor insemination in favour of a do-it-yourself system (with the appropriate legal controls and safeguards). Women would become (as some now are) direct consumers of sperm from sperm banks or acquaintances and would inseminate themselves. The legal status of the parties involved would be established by statute, with contracts (if necessary) supervised by a lawyer. The woman's contact with the world of medicine would begin after impregnation, as is usually the case with women who conceive through sexual intercourse.

If this shift occurred, what would be lost and what would be gained? Since the role of medicine in artificial insemination is largely in shaping perceptions, this cannot be predicted with confidence. What benefits would be lost? The confidentiality offered by the doctor might be forfeited, but purchases from sperm banks can be discreet and, if necessary, sperm banks could be ordered to keep their records confidential. The doctor's function of distancing the woman from the donor would be lost, but could be carried out by the sperm bank. As it is now, those obtaining sperm from acquaintances would stand an increased risk of infection with AIDS or an inheritable disease compared with those obtaining sperm from clinics that use frozen, screened sperm. Some women might feel uncomfortable being inseminated outside a clinic, whether by themselves or by another.

Demedicalization would, however, also remove the disadvantages of medical control. Medicalized donor insemination is costly; lay insemination would probably be cheaper. Some women, including a few who testified before the Commission, have reported dissatisfaction because of insensitivity or a lack of concern on the part of their physicians. Non-

traditional candidates such as single women and lesbians sometimes suffer rejection and undignified treatment. The Commission was informed of cases of over-medicalization — doctors requiring a full infertility work-up for apparently healthy women and administering hyperovulation drugs to enhance the chances of success. Other physicians insert the sperm in the cervix — a procedure not without risk — when vaginal deposit is known to be effective. Finally, demedicalization has the virtue of being realistic: it does not trade on the false assumption that medical expertise is needed or that donor insemination is a medical cure.

Should Donor Insemination Be Made to Support Conventional Mores?

Donor insemination can shore up the traditional family by overcoming infertility and enabling a couple to have a child who will assume the same social role as one who is the biological offspring of both partners. However, the fit between donor insemination and the traditional family structure is now perceived by most of society — with the exception of church leaders — as being so close that donor insemination is no longer likened to adultery or viewed as unnatural. It has become much more acceptable over recent decades.

Using donor insemination to create a mother-child family, on the other hand, flies in the face of these values. The anthropologist Malinowski posited the “principle of legitimacy,” which asserts that for every child there is to be a particular male designated as father, guardian, and protector.⁴ This was held to be a cultural universal, even though the father’s identity, unlike the mother’s, can be open to question. Indeed, the principle compensates for this fact of nature, defining patterns of intergenerational transfer of property and asserting control of property and women on behalf of the family unit.

The almost man-less reproduction involved in the artificial insemination of single women is a pointed exception to this general rule. As such, it has drawn criticism from those professing attachment to traditional “family values,” such as former American Vice-President Dan Quayle, who attacked the decision by television character Murphy Brown to bear and raise a child alone.

Because donor insemination is a double-edged instrument in its effect on traditional family mores, both results must be taken into account. A defender of “traditional family” values may attempt to weigh the net effect: the strength given to the traditional family by providing children versus the challenge posed by the fatherless family unit. An alternative response might be to control the practice of donor insemination tightly so that it cannot be used for unconventional ends. Since medicalization has served as a means of social control — for example, by vesting in physicians the power to reject women they see as unfit to be mothers — those with this view would support continued medicalization. A viewpoint friendlier toward experimentation and individual reproductive choice for women, on the other hand, would welcome de-medicalization for the dispersion of authority it

portends. Such a strategy supports the regulation of medical insemination in favour of accepting all applicants, regardless of the purpose of the insemination.

The Tension Between Reproductive Autonomy for Women and Children Having a Father

It is important to remember that access to sperm and medical services is not enough to make donor insemination an attractive or preferred option for a woman seeking motherhood. Whether the woman is married or single, she would ordinarily want to use insemination only if the donor does not take on any of the rights and responsibilities of fatherhood. In both cases the sperm donor is usually a complete stranger, and if there were a prospect of shared parenting of the child it would be an effective deterrent to using the technique. Lesser forms of donor-child attachment, such as “open” donor insemination, which permits the child at the age of majority to know the identity of the donor, could also be a deterrent for some women.

What allow the distancing of the donor and the mother are the expectations of the parties, the laws of paternity, and the social barrier constituted by the physician or another intermediary. With married women the special title of *donor* is given to the biological father, for the husband stands ready to assume the father's role. In a sense, the practice of donor insemination of single women is parasitic on that of married couples. For the unmarried female, the mantle of fatherhood is not passed on when the donor disclaims it; why, then, is the title of *donor* available at all in such a case?

With donor insemination for the unmarried female, the statuses of *donor* and *father* are voluntary: the man contributing the sperm is excused from fatherhood in part because he and the mother have agreed that he should be. Ordinarily, however, the status of *father* is involuntary. A man and a woman may engage in unprotected sexual intercourse with a signed agreement stipulating that he will have none of the rights or responsibilities of fatherhood, but this agreement will be void in many jurisdictions and would thus not offer protection in a paternity suit brought to ensure child support.

The state's enthusiasm for enforcing the link between father and child is not a relic of some outdated doctrine. It represents an important trend in family law and social policy and draws support from many quarters. It ensures a measure of equality between legitimate and illegitimate children and provides a father for each, thereby countering an old injustice that punished the child for the parents' sins. It also provides a means by which the state can protect itself against the financial burden of child support. Ideally, it could foster progress toward a more just, less “gendered” society in which responsibility for the welfare of children falls less predictably and disproportionately on women.⁵

Between current donor insemination policy and the rules on paternity via sexual intercourse, therefore, there is substantial inconsistency. The sole difference between the two forms of reproduction, in certain contexts, is the vessel by which the semen is delivered to the vagina: in one, it is a penis, in the other, it is a syringe. It is unreasonable to credit this factor with the importance currently attached to it. Some writers, such as Carole Donovan,⁶ urge that the inconsistency be resolved by permitting those engaged in sexual procreation to waive parental responsibility before the fact; others question the wisdom of permitting sperm donors to escape the status of father in donor insemination.⁷ Taken to one extreme, the latter view might condemn all donor insemination, even for married couples.

If there is a tension between the goals of reproductive autonomy for women and closer father-child ties, wherein do the interests of the children lie? Based on the theory that an additional good parent benefits the child — whatever advantages the child might be given by the other parent — emphasis on forging closer ties between fathers and children would seem to benefit children. From this one might be tempted to conclude that reproductive freedom for women in this respect could come at the expense of their children's well-being.

But there are important objections to this argument. One is that if giving the man the role of *father* instead of *donor* would deter a woman from using donor insemination, the alternatives available for the child are not one parent versus two but one parent versus not being conceived. The second objection is that the woman may draw another adult into the family in a parenting role. Finally, there are no data to support the assumption that children who are deliberately conceived into one-parent families suffer relative to other children. Studies of illegitimacy are generally tied to deprivation as a result of poverty, lack of education, and social dislocation, and do not permit extrapolation to the special circumstance of the single woman being impregnated through donor insemination.

What Ethics Should Guide Physicians Performing Donor Insemination?

Most of the basic rules of medical ethics apply straightforwardly to the practice of donor insemination. Some are particularly important, for example, the rule of confidentiality to protect the parents' secret if they wish; others may be difficult to apply, for example, the rule of truthfulness if the physician is asked to withhold the truth about the child's origin from the child.

One question regarding the moral standards of physicians' conduct, however, is entirely unresolved, and it bears directly on the other tensions within donor insemination policy. The problematical norm is physicians' responsibility for the outcome of the insemination. The tension involved can be clarified with reference to two quite different models: genetic counselling and adoption placement.

Genetic counsellors have evolved their own ethical traditions. With some exceptions, they are expected to clarify the choices open to prospective parents but not to attempt to influence their decision. Although the counsellor may have opinions that would strongly favour one reproductive choice over another, he or she has to keep them private and provide a neutral service. The responsibility for the choice and for the welfare of the resulting child, therefore, rests with the parents rather than with the counsellor. However, in this context, the child does not yet exist.

Adoption placement workers, on the other hand, are in a different situation — a child exists — and they are guided by the best interests of the child. Prospective adoptive parents who apply to adoption agencies indicate their desires and needs, but in making placement decisions the question is which parents would be good for the baby, not which baby would be good for the parents. The placement worker, in effect, works on behalf of the child; though the parents may benefit, their interests do not guide the placement service.

In the past, the ethics of donor insemination have more closely resembled the adoption model. Texts on fertility medicine presented lists of “contra-indications” to donor insemination, prominent among which were various supposed indications of unfitness to parent on the part of the prospective mother.⁸ Single status, for example, figured prominently. Physicians were specifically advised that any problem stemming from decisions to let such people reproduce through donor insemination would be their responsibility.⁹

It is surprising that the ethics of donor insemination have followed the adoption model over that of genetic counselling, because in both insemination and genetic counselling the child is as yet unconceived. However, by fostering this sense of responsibility in physicians, society gains agents of social control. Social mores about the family, such as the proscription of illegitimacy, can be enforced through physicians' scruples. And if the physician's sense of right and wrong proves to be too tolerant of social deviance, sanctions can be applied. In Milwaukee, Wisconsin, for example, a physician inseminated a single woman who subsequently lost her job and applied for public assistance to defray the expense of raising the child. A motion was filed in the city council urging a paternity suit against the doctor,¹⁰ and a bill was introduced in the state legislature to define the doctor's action as unprofessional conduct.¹¹

What Constitutes Consumer Protection?

Numerous studies document lapses in the quality of service among physicians performing donor insemination.¹² These include failure to screen donors for inheritable genetic diseases, inconsistent application of professional guidelines designed to minimize exposure to AIDS, and haphazard record-keeping. One remedy for these lapses is stricter regulation and quality assurance. Taken further, this point of view might favour a centralized provincial or national authority that would issue

guidelines, collect evidence of compliance, and serve as a reliable and permanent record-keeper. This kind of regulatory body could help to resolve other questions as well. The social control function of medicalization, which has served to restrict insemination to married women, could be strengthened by including these mores as professional standards enforced by the central agency.

The weakness in this approach, however, is that donor insemination is so easy to do. The practice simply cannot be regulated by controlling the behaviour of physicians. The "secret" — that anyone can safely and effectively perform insemination — has been revealed in numerous self-help manuals and news accounts. Successful donor insemination produces pregnancies that are indistinguishable from any others. Attempts to control reproductive behaviour by regulating physicians would simply drive the practice underground.

While the interest in quality assurance would occasion its medicalization and the centralization of authority in donor insemination, there is tension because the simplicity of the procedure virtually guarantees decentralization and dispersion of authority. This tension suggests two approaches. A centralizing model would issue and enforce standards of medical conduct, maintain records, and discourage reproductive behaviour perceived as injurious to public morals and to potential offspring. An autonomy-oriented model would try to ensure that women interested in donor insemination have the best choices possible. It would include quality assurance in physician-performed donor insemination, but would also facilitate direct access to sperm banks, require non-discriminatory access to physicians' services, and provide education and assistance to women interested in self-insemination, even those using sperm donated by acquaintances. This approach would be consistent with new, more rigorous regulations governing sperm collection and testing.

Implications for Other Reproductive Technologies

Donor insemination is medically simple but socially, ethically, and conceptually complex. The relatively smooth-running practice of donor insemination of women married to infertile men proceeds on the basis of social assumptions, regulations, and controls that are rendered relatively invisible by medicalization and the illusions and misperceptions that it involves. Once the curtain is parted, the central issues are revealed to be ethical and social ones, presenting a series of policy options that rely less on medical authority than on choices among deeply held, conflicting values.

At the risk of some oversimplification, these conclusions can be brought to bear on the wider class of new reproductive technologies. An important lesson from this consideration of ethical issues in donor insemination is that they are not primarily the result of developing medical

technology. *In vitro* fertilization and other new reproductive methods do indeed involve scientific advances. But the issues they raise are not fundamentally different from those posed by the lowly turkey baster, or indeed by single women who use men as "donors" through sexual intercourse. The dilemmas presented by these reproductive technologies are social in origin. There is no escaping the fact that old mores are fading and long-dominant structures are being eroded. What we are seeing now is what happens when those with unmet needs — in this case people who want to become parents — find that pathways that were previously blocked are now open.

What is driving these changes, in sum, is the recent relaxation of age-old taboos and mores regarding sexuality, reproduction, and family life. In one way, medical science played a part in initiating these changes with the development of oral contraceptives, which facilitated the so-called "sexual revolution" of the 1960s and 1970s. This loosening of social mores, together with such developments as deferred childbearing and the entry of more women into the labour force, created a social climate that was receptive to the development and use of the more exotic technologies. In this sense, the social changes caused the technological progress, rather than the other way around.

It is extraordinary how insistently commentators point to seemingly autonomous technological progress as the root cause of these reproductive quandaries. Nowhere is this more evident than in the publicity surrounding surrogate parenting, particularly the case of Baby M. This reproductive arrangement uses no "technology" other than artificial insemination, which is barely a "technology" at all. Yet a front-page story on surrogacy in the *New York Times* in 1988 states that "the divisive surrogacy debate is another example of how medical technology can outrun society's ability to establish rules";¹³ the *Los Angeles Times*, in a 1987 lead editorial, warns that "when it comes to surrogate parenting, medical technology is far ahead of legislators and ethicists alike. We have learned how to outwit nature before we have learned whether we should."¹⁴ Technology does seem to be moving faster than ethical theory, but this imbalance is not the source of our confusion and concern over such practices as self-insemination or surrogate motherhood. Nor is it the core of the issue in the reproductive quandaries that actually do involve advanced science.

The technological fixation is not, however, a harmless misunderstanding. The stress on the technological imperative is itself a factor in the process of social change, and one that has several important and undesirable effects. It suggests a kind of inevitability that is the result of forces outside society and outside social control. In its "technology versus society" theme, it diverts attention away from long-standing conflicts among fundamental values and social groups. New technology provides the occasion, but not the need, for reflection on the ethics of reproductive choices.

Notes

1. U.S. Congress, Office of Technology Assessment, *Infertility: Medical and Social Choices* (Washington, DC: U.S. Government Printing Office, 1988).
2. R. Snowden, G.D. Mitchell, and E.M. Snowden, *Artificial Reproduction: A Social Investigation* (London: Allen and Unwin, 1983).
3. N. Daniels, *Just Health Care* (Cambridge: Cambridge University Press, 1985).
4. D. Kingsley, *Human Society* (New York: Macmillan, 1949); B. Malinowski, "Parenthood — The Basis of Social Structure," in *The New Generation: The Intimate Problems of Modern Parents and Children*, ed. V.F. Calverton and S.D. Schmalhausen (New York: Macauley, 1930).
5. S.M. Okin, *Justice, Gender, and the Family* (New York: Basic Books, 1989).
6. C.A. Donovan, "The Uniform Parentage Act and Nonmarital Motherhood-By-Choice," *New York University Review of Law and Social Change* 11 (1982-83): 193-253.
7. D. Callahan, "Opening the Debate? A Response to the Wiklers," *Milbank Quarterly* 69 (1991): 41-44.
8. For example, S.A. Fish, "Continuing Problems of Artificial Insemination," *Postgraduate Medicine* 38 (1965): 415-20.
9. S.J. Kleegman and S.A. Kaufman, *Infertility in Women: Diagnosis and Treatment* (Philadelphia: F.A. Davis, 1966).
10. *Milwaukee Sentinel* (14 January 1982).
11. Wisconsin Senate measure SB 783, amending Section 448.01 (11). The measure was a rider tacked on to a finance bill.
12. U.S. Congress, Office of Technology Assessment, *Artificial Insemination: Practice in the United States: Summary of a 1987 Survey — Background Paper* (Washington, DC: Office of Technology Assessment, 1988); M. Curie-Cohen, L. Luttrell, and S. Shapiro, "Current Practice of Artificial Insemination by Donor in the United States," *New England Journal of Medicine* 300 (1979): 585-90.
13. "Steps to Control Surrogate Births Rekindle Debate," *New York Times* (26 June 1988).
14. "All Questions, No Answers," *Los Angeles Times* (5 April 1987).

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Artificial Insemination: Bibliography

Compiled by Michèle Musgrove



Executive Summary

This bibliography was compiled by the Commission early in its mandate to give an overview of the literature in the area of artificial insemination. It is intended to provide a concise catalogue of the available literature in its specific area. While not exhaustive, the material listed below comprises a listing of books, articles, and theses examining the medical, social, ethical, and legal aspects of artificial insemination as of 1990. The sources cited are, for the most part, available in general reference or university libraries.

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Mandate

(approved by Her Excellency the Governor General
on the 25th day of October, 1989)

The Committee of the Privy Council, on the recommendation of the Prime Minister, advise that a Commission do issue under Part I of the Inquiries Act and under the Great Seal of Canada appointing The Royal Commission on New Reproductive Technologies to inquire into and report on current and potential medical and scientific developments related to new reproductive technologies, considering in particular their social, ethical, health, research, legal and economic implications and the public interest, recommending what policies and safeguards should be applied, and examining in particular,

- (a) implications of new reproductive technologies for women's reproductive health and well-being;
- (b) the causes, treatment and prevention of male and female infertility;
- (c) reversals of sterilization procedures, artificial insemination, *in vitro* fertilization, embryo transfers, prenatal screening and diagnostic techniques, genetic manipulation and therapeutic interventions to correct genetic anomalies, sex selection techniques, embryo experimentation and fetal tissue transplants;
- (d) social and legal arrangements, such as surrogate childbearing, judicial interventions during gestation and birth, and "ownership" of ova, sperm, embryos and fetal tissue;
- (e) the status and rights of people using or contributing to reproductive services, such as access to procedures, "rights" to parenthood, informed consent, status of gamete donors and confidentiality, and the impact of these services on all concerned parties, particularly the children; and
- (f) the economic ramifications of these technologies, such as the commercial marketing of ova, sperm and embryos, the application of patent law, and the funding of research and procedures including infertility treatment.

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